WORKING PLANS REPORT

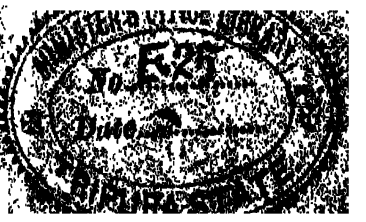
MOHARBHANJ STATE FORESTS

PREPARED BY

C. C. HATT,

OF THE

Indian Forest Service.



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WORKING PLANS REPORT ON THE MÔHARBHANJ STATE FORESTS.

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No. 287D.F.G., dated Darjeeling, the 19th March 1895.

From—A. E. WILD, Esq., Conservator of Forests, Bengal,

To—The Chief Secretary to the Government of Bengal.

MR. C. C. HATT, Assistant Conservator of Forests, who was deputed to the Moharbhanj State on foreign service to prepare a general report on the forests of that State, and to frame working plans for a portion of them, having completed the work upon which he was engaged, and having submitted his report direct to me, I have the honour to forward the same to you in original, and to say that if any remarks of mine are considered desirable, I shall be most happy to give them.

WORKING PLANS REPORT ON THE MOHARBHANJ STATE FORESTS, 1894.

INTRODUCTION.

PERHAPS, seeing that I found it possible to bring only a very small portion of the total area of the State forests under a working plan, as we understand it, a better heading for this report would have been "A report on the Moharbhanj State Forests, with a scheme for their general management on scientific principles," for that is what it really amounts to.

2. The report is divided into two parts; Part I deals with the past history and management of the forests, and is drawn up, as far as possible, according to the heads laid down in section 87 of the Forest Department Code. With regard to Part II, owing to the wide distribution of, and different conditions appertaining to, these vast forests, I find it impossible to place the whole under one system of management, so I have decided to treat them in three different ways, namely, to reserve the best forests, protect the rest, and place selected portions of the Reserved Forests under a simple form of Working Plan. I have divided Part II into four main chapters, as follows:—

Chapter I.—Dealing with the Reserved Forests.
" II.—Dealing with the areas under the Working Plan.
" III.—Dealing with the Protected Forests.
" IV.—General.

3. The chief difficulty in connection with this work has been the size of the area dealt with; roughly speaking, the area of the State is something under 5,000 square miles, and the forests, which are distributed over the whole of this large area, have an extent of about 2,000 square miles; this, of course, necessitated very protracted and arduous tours, during which my difficulties were in many places greatly enhanced by the unwillingness of the local police officers, sardars, and padhans to render me any assistance whatever. In addition to the above, I must add the extremely malarious climate, for my camp was not entirely free from sickness from the time I started on my first tour until the time I finished my last, and repeatedly during the months of May, June and July I found myself without one able-bodied man to assist me in my work in the forest.

4. If approved, the present plan will not undergo revision for ten years, after which time it will be necessary to examine the Reserved Forests generally with a view to deciding upon the advisability of extending its provisions to fresh areas. (See my remarks in Part II, Chapter III, section III, paragraphs 77-78.)

5. There is a good demand for heavy sâl timber, which will exceed the supply pending the opening out of the great sâl forests in the interior of the hills. The excellent timber of some of the other kinds of trees, such as kendu (*Diospyros melanoxylon*), piasal (*Pterocarpus marsupium*), sissu (*Dalbergia latifolia*), goumari (*Gmelina arborea*), panjun (*Ougenia dalbergioides*), &c., receive a considerable amount of recognition locally, and in the future a considerable demand for them may be expected to arise.

PART I.

THE FACTS ON WHICH THE PROPOSALS ARE BASED.

CHAPTER I.

DESCRIPTION OF THE TRACT DEALT WITH.

1 *Name and situation.*—Moharbhanj State lies between 22° 33′ 45″ and 21° 17′ 0″ North latitude and 85° 42′ 30″ and 87° 13′ 55″ East longitude, and is bounded on—

the north by the Singhbhum and Midnapore districts;
the south by the Balasore district and the States of Nilgiri and Keonjhar;
the east by the Balasore and Midnapore districts;
the west by the Singhbhum district and Keonjhar State.

In addition, outside the boundaries of Moharbhanj proper, are the two zamindaris of Nyabasan and Rohini belonging to the Raja, and a small detached piece of Moharbhanj called Oolmoora. All these areas are situated outside the east boundaries.

2. *Configuration of the ground.*—Speaking generally, the whole of the central portion of the State is occupied by hills running up to an elevation of nearly 4,000 feet, the highest, Meghasini in the southern portion, being 3,824 feet high; lying around these hills is the undulating plains portion of the State.

3. Running due north and south from this central hill group, we have two ranges of lesser elevation dividing the plains portion of the State into two distinct halves, the eastern and the western; this latter half is again divided into two portions by another range of hills running in a westerly direction from the northern portion of the main central group, and we get three distinct portions divided off from each other by hill ranges and drained by different rivers, namely—

(*a*) The eastern portion, drained by the Barabalang, Sooni, and Jamira rivers.
(*b*) The north-western portion, drained by the Kodkai river.
(*c*) The south-western portion, drained by tributaries of the Baitarni river.
(*d*) The hills may be called the central portion and placed under (*d*).

4. The configuration of the plains portions (*a*), (*b*) and (*c*) is very similar, except that the eastern portion, (*a*), taking it all round, is not so undulating and is at a lesser elevation than the western portions (*b*) and (*c*); dotted about on these undulating plains occasional rocky hills occur, and, near the foot of these, and where the plains are contiguous to the central hill group, we often have large sterile tracts much cut up by streams giving a hummocky appearance, the underlying rock frequently appearing at the surface in tabular and dome-like masses which are often waterworn.

5. With regard to the hills, owing to the extreme hardness of the rocks of which they are composed, they are in many places very precipitous, and we often see huge masses of bare rock standing out on which no vegetation can gain a foothold; many of the valleys call to mind the Tista Valley below Kalimpong in the rocky precipitousness and the general scantiness of their vegetation. The northern portion of the hills contains more plateaux and is not so much cut up by deep valleys as the southern portion.

6. *Underlying rock and soil.*—The hills are composed of metamorphic rocks of all kinds, from gneiss, in which the foliation is distinctly visible, to granite, all intermediate gradations being present; the gneiss is often veined, and in parts, enormous quantities of quartz occur both in crystalline and amorphous forms; the hill sides are frequently strewn with angular fragments of crystalline rocks of all kinds, the older metamorphic rocks often being overlaid by a laterite formation, containing much iron and forming the plateaux noticed in paragraph 5. The bottoms of the valleys, often up to considerable elevations, contain calcareous matter mixed with ferruginous nodules. A heavy dark-coloured stone containing much iron also occurs with the laterite.

7. The plains portion seems to be composed chiefly of laterite and the older alluvial deposits, the underlying gneissose rocks often outcropping either as small rocky hills or as rounded domes and flat tabular masses, angular fragments often being strewn on the surface of the ground. In places also, often associated with calcareous matter, I have noticed what appeared to be a sort of coarse gritty sandstone approaching at times to a conglomerate. Speaking generally, the western portions have more of the underlying gneissose rock showing at the surface than the eastern.

8. The two formations, the laterite (which consists of oxide of iron and coarse quartz sand) and the alluvial (which consists of clay and sand often containing a great amount of calcareous matter in the form of concretionary nodules), alternate—now a patch of one, now of the other, the laterite forming the higher ground, the intervening low-lying ground being

alluvial. As may be supposed, these two formations give rise to two distinct classes of soil, the laterite giving rise to a reddish, somewhat sandy soil, much inferior to the stiff yellowish-whitish clay of the alluvial deposit which is eminently suited for cultivation; the alternation of these two different soils, the one favourable for cultivation, the other not, has apparently been the direct cause of the patchy condition of the plains forest treated of in Chapter [illegible].

9. *Climate.*—There is only one place in Moharbhanj where any weather statistics are recorded, namely, in Baripada itself. I give below a table of the rainfall as measured there for the past ten years. Up in the hills, where the great sâl forests are situated, the rainfall is considerably more, and from one season's experience, I should say about 50 per cent. heavier than in the plains. Glancing at the accompanying figures we arrive at the following: –

In the plains the months of maximum rainfall are—

July	...	...	...	12·30
August	...	...	...	12·26

In the hills the months of maximum rainfall are—

July	...	...	...	18·45
August	...	...	...	18·39

In the plains the months of minimum rainfall are—

December	...	...	...	·14
January	...	...	...	·18

In the hills the months of minimum rainfall are—

December	...	...	...	·21
January	...	...	...	·27

inches per annum, taking the average figures of the last ten years.

Monthly rainfall at Baripada.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1	2	3	4	5	6	7	8	9	10	11	12	13
1884 ..	.. ...	0·13	0·12	3·24	3·65	12·72	14·79	9·33	11·00	6·97	.....	0·04
1885 ...	.....	2·23	0·40	0·35	4·41	16·66	11·25	18·38	12·50	1·03	0·33	1·32
1886 ...	0·40	.....	2·91	0·10	6·53	11·02	9·58	10·05	16·45	3·96	1·54	.....
1887 ...	0·66	.....	6·67	1·17	6·02	5·68	13·81	8·52	8·71	2·73	0·19	.. ...
1888 ...	0·41	2·31	0·31	0·83	6·43	4·79	14·16	18·39	9·62	0·87	1·52	0·02
1889 ...	.....	1·88	0·09	1·73	4·30	13·91	9·92	13·98	5·57	5·02	4·27	... ..
1890 ...	.....	... ..	1·95	0·77	4·72	14·77	7·49	9·74	18·30	9·43	0·65	0·05
1891 ...	.....	0·83	7·29	0·66	4·47	5·18	11·38	20·51	17·07	1·41	0·35	.....
1892 ...	.. ....	0·57	.....	0·63	4·35	6·14	14·14	3·03	8·77	7·47	0·42	.....
1893 ...	0·28	4·44	1·36	3·15	14·10	21·28	16·44	6·71	14·59	6·53	.....	.....

Summary of rainfall figures.

Year.	Total rainfall.	Year.	Total rainfall.
1884	61·99	1889	60·67
1885	69·72	1890	67·83
1886	62·59	1891	69·15
1887	49·36	1892	45·52
1888	59·46	1893	88·88

The above figures give the average rainfall at 63·52 inches per annum for the last ten years.

10. *Agricultural customs and wants of the people.*—The way in which the cultivator sets to work in order to convert forest into cultivation is as follows:—

First and foremost, the undergrowth and smaller trees having been burnt and cut away, the larger trees remaining on the area are ringed and left to die; the land thus roughly cleared is called "dahi" and is then ploughed, early paddy, oilseeds, &c., being sown; after two or three years' crops, if the soil is of the inferior lateritic variety, it is probably abandoned, but, if of the better class, the stumps of the trees are removed and the land is thoroughly cleared; it then becomes more valuable for cultivation, and is rated higher than the roughly cleared "dahi" class of soil; this is called "asu" class, which may be further improved into the "jal" class, if water is available, by constructing small bunds and irrigating the crops: such land is sown with "aman" or winter paddy. For an average piece of jungle to be made into "jal" land might take about five or six years, say three years as "dahi" and two years as "asu" and then as "jal"; the best soil, however, in favourable situations as regards water-supply would be made into "jal" much quicker, probably in a couple of years at the outside.

11. The less civilised, wilder people, possibly owing to their lazy habits, do not clear the land they intend to cultivate thoroughly, and never get beyond the "dahi" stage; they prefer clearing a new piece roughly, as less trouble is involved in this than in extracting stumps, constructing bunds, and otherwise preparing land for permanent cultivation, and besides being assessed at a cheaper rate, and very often not being assessed at all, this "dahi" class of soil is quite sufficient to grow them what they need for their own use. On this land they will stop for a year or two, and then probably, without the shelter of the forest canopy and supply of humus, the land may become sterile, or the revenue officer may come round to assess them, or they may be frightened away by wild beasts, when they will move on and begin clearing somewhere else; after a year or two at this new place on they will go again, regularly honeycombing the forest for a few pice worth of cultivation. This seems to be identical with the "jhum" cultivation noticed by Sir Dietrich Brandis in Burma; the effect on the forest, which is appalling, is very well illustrated in the south-west portion of the State. Around and about Simlipal in the central hill group, and indeed all over it, there are a great number of deserted villages, some of which give evidence of having contained "jal" land, and look as if a permanent cultivation had been intended; possibly this was the intention, in which case the abandonment is due to wild elephants and tigers, numbers of which animals abound in this region.

12. The wants of the population are not very extensive, and there should be no difficulty in supplying them, a large proportion of the State being still under sâl pole and mixed forest which will supply them with firewood and materials for house building and agricultural implements, which is about the sum total of what they want.

CHAPTER II.

COMPOSITION AND CONDITION OF THE FORESTS.

13. *Distribution and area.*—It will be seen from the subjoined area statement that the total area under forest in Moharbhanj amounts approximately to 1,760·3 square miles, of which 331·7 contain mature sâl, the rest consisting of mixed forest in places containing very heavy trees, and seedling sâl pole forest from little better than a mere scrub to very magnificent poles between two and three feet girth and about 60 to 70 feet high.

14. This large area of forest is distributed almost over the whole area of the State, namely, an area of 4,243 square miles.

Beginning with the forest containing mature sâl as being the most important, we find it still remaining in the more inaccessible parts; it only occurs in one place in the plains portion of the State, viz., the south-west portion, where there is a little which is three parts ruined by "jhum" cultivation. With the exception of this place I feel pretty confident in asserting that you will not find a sâl tree over 6 feet girth in any other portion of the plains, unless it be some solitary monster left by the villagers for ornamentation or shade-giving properties serving to show what sort of a forest grew there in days gone by. Although the plains have been practically denuded of their mature sâl, still we find very fine forest in the inner hills, the outer hills having been denuded, or partly denuded, of their mature sâl.

15. Although there is so little mature sâl forest in the plains, there is still plenty of sâl pole and mixed forest. Using the subdivisions of Chapter 1, paragraph 3, we find that—

(*a*) The eastern portion, as regards the area under forest, comes about midway between (*b*) and (*c*).

(*b*) The north-western portion contains least of all.

(*c*) The south-western portion by far the most.

(*d*) The hills are practically all forest, or else bare rock, with the exception of the bottoms of many of the valleys which contain deserted clearings, these clearings often forming a kind of chain running along the base of the valleys.

Most of the forest in portion (*a*) is situated around and to the south of Baripada. I have computed the figures given in the subjoined area statement from the 4-miles-to-the-inch map of Moharbhanj contained in the Atlas of India sheets, Nos. 114 & 115. Of course they are only approximate, but I do not think they are very wide of the mark, as I have seen pretty well every part of the State and made a point of noting down the percentage of forest met with daily in my tours.

Area statement.

	Cultivation.		Waste.		Forest.		Total.
	Square miles.	Per cent.	Square miles.	Per cent.	Square miles.	Per cent.	
1	2	3	4	5	6	7	8
Hill portion (*d*)	37·53	3	462·87	37	750·60	60	1,251·00
East plains (*a*)	786·60	45	349·60	20	611·80	35	1,748·00
North-west plains (*b*)	409·50	65	189·00	30	31·50	5	630·00
South-west ,, (*c*)	92·10	15	153·50	25	368·40	60	614·00
Total ...	1,325·73	.....	1,154·97	.....	1,762·30	.....	4,243·00

That is to say, about one-third of the total area of the State is under cultivation, about a quarter is waste, and about two-fifths is under forest. A map, showing roughly the distribution, is attached to this report; the area over which mature sâl is distributed is coloured dark; from this it will be seen that the mature sâl is distributed over an area of about 560 square miles, and the remainder over an area of about 3,683 square miles.

16. *Legal position.*—All the forests are entirely at the disposal of the Raja, who will shortly issue notifications under Act VII of 1878, which he has decided shall come into force in Moharbhanj State.

17. *Rights.*—The inhabitants pay a cess to the State for their firewood, house-building wood, and the wood for their agricultural implements, which, of course, gives them a right to extract the necessary material from the forest. I propose to set aside the protected forests for the use of the people, on whose behalf and for whose benefit they will be worked.

18. *Composition and condition of the crop.*—As regards composition, the forest may be divided into two kinds:—

Sâl forest	...	... In which sâl is the prevailing tree.
Mixed forest	...	... In which sâl is not the prevailing tree.

These two kinds of forest, alternating according as the factors of the locality favour the one or the other, the mixed forest invariably being found in lower and damper situations; the sâl, on the other hand, affecting the higher and drier.

19. In the sâl forest a good deal of asun (*Terminalia tomentosa*) is invariably mixed, and in many places we note the trees so characteristic of the mixed forest occurring, though never in such quantities as the asun, the factors of the locality for which appear to be identical with those of the sâl. We find sâl forest in which sâl is only just the prevailing tree and sâl forest which is almost pure sâl, with the exception of a few asun, from which the sâl appears to be inseparable, all intermediate stages being represented in these extensive forests. Among other species mixed with the sâl I have noticed:—

Kendu (*Diospyros melanoxylon*), Piasal (*Pterocarpus marsupium*),
Mahua (*Bassia latifolia*), Dhau (*Anogeissus latifolia*),
Kusumb (*Schleichera trijuga*), Gambari (*Gmelina arborea*),
Sissu (*Dalbergia latifolia*),

and many of the species mentioned in the succeeding paragraph. When the sâl is very thin, as is often the case in unfavourable localities, there is usually a valuable undergrowth of bamboo, thatching grasses, and babai grass; this latter grass and the two palms (*Phœnix sylvestris* and *P. acaulis*) appear to be very characteristic in extremely dry localities. The dhau (*Anogeissus latifolia*) is often gregarious in particularly dry and rocky situations.

20. The most useful species of the mixed forest are:—

Am (*Mangifera indica*).
Bar (*Ficus bengalensis*).
Pipul (*Ficus religiosa*).
Kaim (*Ficus infectoria*).
Nim (*Melia indica*).
Palasi (*Butea frondosa*).
Koombi (*Carya arborea*).
Char (*Buchanania latifolia*).
Asun (*Terminalia tomentosa*).
Hurra (*Terminalia chebula*).
Bahera (*Terminalia belerica*).
Arjun (*Terminalia arjuna*).
Jam (*Eugenia jambolanum*).
Simul (*Bombax malabaricum*).
Anjun (*Hardwickia binata*).
Champa (*Michaelia champaca*).
Panjun (*Ougenia dalbergioides*).
Karam (*Adina cordifolia*).
Makur Kendu (*Diospyros embryopteris*).
Siris (*Albizzia lebbek*).
Rohin (*Soymida febifruga*).
Behru (*Chloroxylon swietenia*).
Tamarind (*Tamarindus indica*).
Jack (*Artocarpus integrifolia*).
Bel (*Aegle marmelos*).
Kuchila (*Strychnos nux vomica*).

The species mentioned as occurring with the sâl must also be included in this list.

21. *Condition of the sâl forest of the plains.*—We now come to the condition of the crop; as might be expected in such an extensive area, every conceivable condition from mature sâl forest to scrub is represented. Considering first the plains forest, we find that by comparing the forest in the three divisions (*a*), (*b*), (*c*) (see Chapter I, paragraph 3), we can trace the conversion of a mature sâl forest into small patches of scrub alternating with cultivation. The condition of the forest in the south-western corner, where mature sâl still exists, illustrates the first stage. Here we find open spaces scattered about the forest on which thousands of large dead trees are standing; these dead trees, though, are not confined merely to the open spaces, but the adjacent forest bristles with them in all directions. Most of the mature trees now remaining alive show signs of having been hacked about, many of them having recovered themselves at the expense of a diseased bole, this being probably the work of the resin collectors. The second stage is marked by the disappearance of these large trees. The open spaces above mentioned have increased in the meantime sending out arms in all directions, while new isolated patches have sprung up; this goes on until the forest is completely honeycombed and the clearings run together, and we no longer get a forest with patches of cultivation, but cultivation and waste land with patches of forest, the waste land being deserted clearings in many

cases. The condition of the forest, as was only to be expected, varies conversely as the number of cultivators; thus, in the honeycombed sâl forest where cultivators are few, the adjacent forest is very fine, often consisting of sâl poles 2 feet to 3 feet in girth and 60 feet to 70 feet high, beautifully tall and straight. As we get to the more cultivated districts the forest degenerates woefully, the poles getting smaller and smaller, then crooked and stag-headed owing to the drying up of the ground consequent on the removal of the forest canopy, and finally disappearing altogether. Starting from the south-western corner and marching round the State, keeping the central group of hills on the left hand, we note this process going on. The south-western corner itself exemplifies the first stage, and the north-eastern corner the final stage, where we see the largest proportion of cultivation and a great deal of waste land which should, by all the laws of common sense, have been left under forest; the intermediate stages are met with on our way.

22. *Condition of the hill sâl forests.*—Taking the forests in the central group of hills, we note the same effect of the proximity of cultivation at the bottoms of the valleys around old deserted clearings, but here we find also what was conspicuous by its absence in the plains, viz., unmutilated mature sâl forest. At a place called Boirupani, for instance, there is as magnificent a sâl forest as it is possible to imagine. Here we see trees over 7 feet girth growing thickly together, very lofty, good crowns, and extremely well grown in every way, and although, in my tours through the hills, I did not see anything quite equal to this elsewhere, a good many places approached very near to it. On the other hand, there are large areas which have been partly denuded of their mature sâl, these being situated in the more accessible localities.

23. This fine sâl forest alternates with mixed forest, sâl of inferior growth, scrubs, and waste, according to the factors of the locality; there is a high proportion of waste owing to the geological formation of these hills, as mentioned in Chapter I, paragraph 5. There does not appear to be any marked difference between the sâl forests of the hills and plains; the one thing I noticed is that the sâl does not lose much in girth in unfavourable localities, but its height growth is greatly affected. In a good locality, for instance, an 8 feet sâl tree would be about 110 feet high, whereas in an unfavourable locality a tree of equal girth will only attain a height of from 60 feet to 70 feet, possibly less.

24. *Condition of the mixed forest of the hills and plains.*—Like the sâl, and from the same causes, the conditions of the mixed forest are various, only there has not been such a wholesale removal of mature trees as in the case of the sâl, and consequently they contain heavier timber. In two forests of equal accessibility, one being sâl and the other mixed, in the sâl you may not find a tree over 3 feet girth, whereas the mixed forest will probably contain trees of 10 feet and 11 feet girth. One thing especially noticeable in the mixed forests is the damage done by creepers which are to the mixed forests as fire to the sâl—the bane of its existence.

25. *Injuries to which the crop is liable.*—For the purposes of this subhead it will be best to divide the injuries to which the crop is liable into two main groups:—

(A) Injuries caused by man's agency—
- (*a*) Fire.
- (*b*) Grazing.
- (*c*) Villagers.

(B) Injuries caused by natural agency—
- (*a*) Wild animals.
- (*b*) Plants.
- (*c*) Wind.
- (*d*) Lightning.

(A) Injuries caused by man's agency.

26. (*a*) *Fire.*—There are two methods of firing the forests common with the inhabitants of Moharbhanj; in one way the grass and undergrowth is set light to in all directions by the villagers, and the whole countryside for miles round is ablaze; this commences about the middle of February and continues incessantly until put a stop to by the rains about the end of May; the object in view is to clear away the undergrowth and thus facilitate shikar and locomotion generally through the forests. The damage done to the young growth by this reprehensible practice is incalculable, as natural regeneration is greatly retarded, and, in many unfavourable localities, utterly precluded by it. In such localities as these, fire is a most powerful waste-producing agency.

27. Another method—and a very general one too—is to apply fire to the bases of large sâl trees, this very often occurring in the forest adjacent to village clearings, and is most likely a surreptitious attempt to increase the size of the clearing by killing the adjacent trees; in many cases, however, the reason is not so apparent, as I have seen large sâl trees very much charred and burnt at their bases far away from cultivation of any sort; this looks very often

as if it was a custom of the aboriginal tribesmen to light camp fires at the bases of large trees (sâl for preference) without any ulterior design upon the tree whatever, or it may be that the fire mentioned in paragraph 26 has caught the trees. I should be rather inclined to the latter opinion had I not several times found old fireplaces of rough stones built at the base of the tree with other signs of old encampments scattered around. In face of the foregoing there is no difficulty in arriving at the conclusion that the Moharbhanj State forests are exposed to, and yearly sustain, immense damage from fire, surpassing in its effects all the other injurious influences put together, bad as they are.

28. (*b*) *Grazing.*—In the more highly cultivated portions of the State where the village cattle (buffaloes, cows, sheep, pigs and goats) are allowed to graze in the adjacent alternating patches of laterite soil, many of which are still covered with young sâl forest on the point of extermination, it is greatly to be deprecated, as the young trees coming up are cropped off, year after year, by the cattle which, in such areas as these, are a powerful waste-producing auxiliary to the fire.

29. (*c*) *Villagers.*—Besides causing damage indirectly by setting fire to, and allowing their cattle to graze in, the forests, the villagers themselves cut, hack about and remove the larger trees and poles which are still remaining, and thus form a third auxiliary to the fire and cattle in their anxiety to produce a howling wilderness at the shortest possible notice; the fire and the grazing effectually accounting for the undergrowth, and the villagers destroying what is out of the reach of the first two destroying agencies.

30. Away from cultivation, in the depths of the forest, we notice a good deal of damage is done by cutting trees down for honey, wasp grubs (eaten by the jungly people), etc., and by mutilating them to extract resin.

(B) Injuries caused by natural agencies.

31. (*a*) *Wild animals.*—Of the numerous wild animals the elephants do the greatest damage by tearing off the bark from the trees in long strips; I have seen large sâl trees with the bark hanging in long strips 30 to 40 feet long. In addition to thus barking the large trees they overthrow smaller ones, break branches, trample all the undergrowth under foot, and otherwise damage the forest.

32. (*b*) *Plants.*—Creepers occur in great quantity in the mixed forests, but luckily are not nearly so numerous in the sâl where, however, they often occur choking and distorting the trees they have managed to lay hold of. In addition to the creepers the epyphitic figs, though not so common, are even more dangerous when they do occur, growing downwards as they do from seed deposited by the wind or birds in the upper branches of their hosts, which they finally destroy by completely enveloping and choking the life out of.

33. (*c*) *Wind.*—I have noticed the tops of the largest trees are often broken off by the wind owing to their being exposed by being elevated above the surrounding jungle; trees have been uprooted altogether in very exposed situations.

34. (*d*) *Lightning.*—A good deal of damage has been done, and in many places trees give evidence of having been struck; in the great majority of cases it has resulted in the death of the tree.

CHAPTER III.

SYSTEM OF MANAGEMENT.

35. *Past and present systems of management.*—In olden days the forests around the palace at Baripada were reserved for shikar purposes, but this does not seem to have precluded the removal of large trees, since I find none in that neighbourhood now.

36. The first method of disposing of the timber was by selling certain timber-hauling routes to the highest bidder, who thereby became entitled to cart away as much timber as he could possibly cut along that route; this let in the big contractor, the thoroughness of whose work is testified by the present condition of the plains forest as regards the size of the trees remaining. There is a wealthy babu in Balasore, the bulk of whose fortune was made in this manner; he was allowed to work the whole of the forest between Baripada and Balasore for a trifling sum, and he certainly made very good use of his opportunities, having made a clean sweep of all the trees over 3 feet girth. The extent of the forests denuded by this man amounts to about 200 or 300 square miles.

37. From the late Maharaja's time, the preservation of the forests was decided upon, and to this end the route system was discontinued, and about ten years ago an order was issued prohibiting the felling of certain trees without the permission of the Maharaja, but, sad to relate, the beneficial results, which ought to have obtained to the forests, have been very much minimized by the utter disregard shown by the subordinate revenue and police officers to the order in question; these people appear to be absolutely indifferent as to what happens within the forests in the limits of their respective jurisdictions, and, as a result, the forest is mutilated in all directions, and thefts of timber are carried on without any attempt at concealment all

over the State. When we add to this that the leases for cultivation are issued in the most haphazard manner without any regard as to the value of the forest on the land in question, or its aptitude for cultivation, and that the lessees now at work in the forests are absolutely without supervision from the State, it can easily be believed that the benefit derived by the forests from their past and present "management" has been reduced to a minimum.

38. At present the whole system of working the forest is by giving out leases; there are two of these men engaged in extracting heavy timber now, and the sooner they are turned out of the forest, the better; the force of this remark will become obvious when you have read the conditions of these leases which I give below. They are one-sided to such a degree that it is difficult to imagine how it came to pass that they were granted at all. Here is one :—

Conditions of Lease.

I.—Exclusive of kusumb, panjun, mohul, sissu, all species of green trees may be extracted to the number of 700 per annum.
II.—In addition to this, 320 dry sâl trees may be extracted per annum.
III.—The size of the trees to be cut must be over 3 feet girth, except the dry sâl trees which may be of any size.
IV.—Measurement to be taken 3 feet above the root.
V.—Trees for carts, boat building, and rafters—amount unlimited.
VI.—Timber to be examined by a State officer in lessee's dockyard at Balasore, or at a place called Foolwar (both outside the State boundaries).
VII.—Any timber left by the lessee after the expiry of his lease becomes State property.

This lease runs for nine years from the 18th March 1893.

As far as I can see, the conditions of this lease entitle the lessee to every tree in the forest of the unfortunate area over which the lease extends; it is a large area situated near the eastern face of the central hill group, about 20 miles from Baripada in a south-westerly direction.

39. There is nothing particular to notice in the first four clauses of the lease. Clause V is the fatal clause, and, as if conscious of it, VI was apparently inserted as a saving clause, but, of course, is perfectly useless, as the examining officer has no check of any kind to apply. Clause VII strikes one as superfluous and merely calculated to induce the lessee to make as clean a sweep as he possibly can.

40. The conditions of the other lease are :—

I.—The extraction of dried wood (sookila) from the Simlipal pargana.
II.—The wood to be carried away by the Sirsa ghat.
III.—The lease to run for five years.

By this lease the lessee becomes entitled to all the dry timber over an area of about 500 square miles, containing all the best forests in Moharbhanj. This lease should have done no harm had the lessee been an honest person, or had the State exercised some sort of supervision; as it was, the lessee was stealing green trees and carting them away in the most open manner, destroying these magnificent forests as fast as he could. I have since persuaded the Raja to cancel this lease. Each of these lessees pays Rs. 1,000 per annum to the State for his lease.

41. As regards minor products, certain annual duties are levied by the State upon all the people who collect them from the forests; permission to collect these prescribed duties from all people dealing in forest produce is leased out annually to the highest bidder. The following are the State duties on various products; they amount to yearly permits for one man to collect and deal in the product named :—

Product.	Duty per annum. Rs.	A.
Rearing and dealing in tusser	1	8
Collecting mother cocoons	1	4
Myrabolams	1	4
Nux vomica	0	4
Kusumb fruits	0	4
Resin	0	8
Charcoal	0	2
Babai grass	0	2
Sâl leaves	0	2
Horns	0	8
Birds	1	0
Simul cotton	0	2
Medicinal roots and barks	0	2
Calcareous nodules	0	2

Note.—The above duties are variable. On many other products there are no duties at all.

The absurdness of the above rates becomes apparent when we consider the amounts that one man can collect in a year. Let us take a few examples :—

Myrabolams.—By paying Re. 1-4, a man may take as much as he can collect in one year, viz., taking the terminalias as being in fruit for two months, and the man's collecting capacity at 2 maunds per diem, about 120 maunds. The bazar value of 120 maunds of myrabolams is from Rs. 75 to Rs. 120.

The Singhbhum rate is annas 8 per cart-load, which amounts to Rs. 7-8 for 120 maunds taking each cart-load at 8 maunds as opposed to the Re. 1-4 here.

Resin.—I do not know how much resin one man could collect in a year if he set his mind to it. In Singhbhum the rate is annas 2 per head-load, which, supposing the man to collect 50 head-loads, and each head-load to weigh half maund, gives us a value of Rs. 6-4 for 25 maunds as opposed to the annas 8 here. The bazar value of 25 maunds of resin is about Rs. 62.

I do not think it is necessary to give any more examples in support of the conclusions I have arrived at, viz., that the rates for minor forest produce are abnormally and unnecessarily low.

42. The inhabitants are supplied with firewood and sâl poles up to 27 inches girth for building their huts, and they pay a cess, which is collected by the sardars and padhans, for this privilege.

Past Revenue and Expenditure.

43. *Revenue.*—I give below the actual figures for the last ten years ending the 31st March 1894, in which the amount received under the various sub-heads will be seen at a glance :—

MOHARBHANJ STATE.

Statement showing the Nett Revenue derived from Forests for the last 10 years ending 31st March 1894.

HEADS OF RECEIPTS.	1884-85.	1885-86.	1886-87.	1887-88.	1888-89.	1889-90.	1890-91.	1891-92.	1892-93.	1893-94.
	2								10	
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A.	Rs. A. P.
atti mahal (fagots) ..	582 12 0	1,035 14 9	3,220 9 3	2,973 9 9	3,229 0 3	1,704 9 0	2,352 9 9	1,503 11 0	1,807 6	1,855 11 8
th mahal (timber les es).	4,939 0 0	2,394 0 0	40 0 0	85 0 0						2,301 0 0
uni kath kor (firewood) ...	3,118 8 5	2,837 5 2	7,626	15,027 4	23,417 7 2	24,034 4 2	21,955 3 3	165 6 11	20,559 5	23,102 9 1
gle produce (minor) ...	4,035 11 0	3,263 12 6	4,111	7,508 0	3,258 0 5	6,681 1 6	6,670 9 3	556 14 10	4,782 1	6,309 4 7
r license fee	...	...		3,021 8	797 10 3	2,513 6 2	901 15 0	448 8 0	836 15	1,303 1
ber business (petty les).	1,037 9 8	5,149 9 3	5,816 8 0	4,920 13	3,413 10 6	6,205 2 9	5,404 11 9	157 4 3	9,143 12	3,106 0 3
GRAND TOTAL ...	13,773 9 1	14,680 9 8	20,815 3 5	33,536 5 5	34,145 12 7	41,138 7 7	37,285 1 0	38,849 13 0	36,929 9 7	38,137 11 4

There are three main points which seem to me worthy of notice in these figures :—

1. That nearly two-thirds of the revenue is derived from the cess on the inhabitants, fire and house-building wood (under head Jaluni kath kor).
2. That only Rs. 9,628-2 is derived from minor produce (total of heads Jhatti mahal, Jungle produce and Tusser license fee), although about Rs. 1,00,000 worth is exported annually (see paragraph 47).
3. That only Rs. 2,301 was derived from the sale of about 60,000 cubic feet of good sâl timber (see paragraph 45).

44. *Expenditure.*—A 5 per cent. commission given to the cess collecting agency, consisting of the sardars and padhans, on Rs. 25,058-4-9 (this sum being the total of the two heads Jhatti mahal and Jaluni kath kor) amounts to—

		Rs. A. P.
		1,252 14 8
Plus		420 0 0 (establishment).
	Total	1,672 14 8

which is absurd.

CHAPTER IV.

UTILIZATION OF THE PRODUCE.

Marketable products: quantities consumed in past years.

45. *Timber.*—Of late years—so I am informed, for there are no records on the subject—an average of about 800 logs per annum has been sold from these forests. The two lessees who were at work when I came in November 1893 were extracting, I suppose, about 1,000 logs apiece per annum, green and dry.

In addition to the above the number of sâl poles used by the inhabitants for house building must have been enormous, and may be roughly estimated at about 500,000; another yearly recurring item is the building of the Juggernath cars, for which about 5,000 young sâl trees are required annually.

The number of trees, other than sâl, removed by the people for domestic uses may amount to about 20,000 in the year.

Summarising the above we get :—

Annual outturn,—

Sâl—

	C. ft.
2,000 logs, averaging 30 cubic feet each	60,000
505,000 poles, averaging 1-5 cubic feet each	757,500
Other species—	
20,000 trees, averaging 50 cubic feet each	1,000,000

46. *Minor produce.*—Turning to minor produce, it will be noticed from the following estimate supplied to me by the Dewan of the State that about Rs. 1,00,000 worth is sold in the bazars annually by the raiyats paying the prescribed annual duties.

Estimated sale of Minor Produce in the Bazars.

Product.	Amount sold.	Bazar rates (liable to variation).
1	2	3
Tusser cocoons	2,500,000	100-120 per rupee.
Ditto (mother)	20,000	1 to 2 annas each.
	Mds.	
Myrabolams	6-8,000	Annas 10 to Re. 1 per maund.
Nux vomica	6,800	Re. 1 to Rs. 2 per maund.
Kusamb fruits (oil and dye)	10,000	4-5 seers of oil per rupee.
Mohul flowers	15,000	Annas 10 to Re. 1 per maund.
Resin	1,000	1 anna per seer.
Lac	1,000	Rs. 5 to Rs. 8 per maund.
Babai grass	15,000	3 sagor loads per rupee.
Charcoal	5,000	4 to 6 annas per maund.
Honey	250	4 seers per rupee.
Wax	100	2 ditto.
Birds (mynas)	No. 1,000	4 per rupee.
Horns	150	
Simul cotton	No figures given.	
Iron ores		
Bamboos		
Canes		
Calcareous nodules		
Fruits (tamarind, mango, jack, lime) ...		
Sâl leaves		
Mica		
Skins		
Fibres		

47. It will appear from the above figures that there is a very large yield of minor produce in Moharbhanj, also that the bazar value of this produce amounts to something like Rs. 1,00,000. Now, most of this money must go into the pockets of the dealers, who, buying the commodity from the ignorant cooly at about one-hundredth part of its proper value, export it to other districts. The result of this is that the State derives very little benefit from this large export of minor forest produce; the people who derive all the benefit are these dealers, whose only connection with Moharbhanj is to make money out of it at the expense of its ignorant population.

48. *Lines of export.*—The main lines of export are to Midnapore, Balasore, and Chaibassa. I give below a list of the roads now existing in the State, together with a few remarks on their condition :—

I.—Baripada to Chaibassa.—Connects Baripada with the Bengal-Nagpur Railway at Chakardharpur. This road is bridged except at the big nalas.

Branch roads.—Bisai to Daspur.—Bridged except at big nalas.

Boalda to Huldipukur.—
Rirantpur to Karangea.— } Both unbridged and kutcha.

II.—Baripada to Midnapore.—Bridged, except at big nalas, for a part of the way only.

III.—Baripada to Balasore.—Bridged road.

Branch roads.—Baripada to Jaipur, with a sub-branch from Pertabpur to Mantri.

Nangalkata to Murda.—
Baisinga to Jaipur.— } All unbridged and kutcha.
Baisinga to Mantri.—

IV.—The old Sambalpur road, from Daspur towards Keonjhar State.—It is not kept open, and is only practicable in the dry weather.

V.—From Takurmunda to Bhadrak.—The export line is merely a track, no road having been made there yet.

49. In addition to these roads, the following rivers are suitable for floating timber, and may become very valuable as lines of export :—

I.—The Barabalang, from Baripada to Balasore.

Tributaries :—Gangahar, from junction of the Arikul nadi; Sunai, from Koinsari.

II.—The Baitarni, which connects with Cuttack by the High Level Canal.

50. *Markets.*—Most of the timber removed in former days went to either Balasore, Midnapore, Bhadrak or Chaibassa, but, in the future, I see no reason why these forests may not be able to supply heavy sâl timber to the Cuttack and Calcutta markets as well. Logs could be floated either down the Baitarni to Chandbali or the Barabalang to Balasore, at both of which ports they might be shipped off to Calcutta by the India General Steam Navigation Company, or by the rival line.

The proposed Cuttack-Midnapore-Calcutta Railway will be another great line of export when it is finished.

51. *Mode of extraction and its cost.*—In the case of heavy timber, the method of extraction is by buffaloes; in places where it is not possible for even the country carts to penetrate, the logs are dragged by these animals. I saw some squared logs, each averaging about 30 cubic feet, being extracted from the forest near which I propose to locate my Eastern Working Circle; here I found that four buffaloes were required for each log in bad places, two being yoked to each end by a rope passing through holes cut at each end of the log; as soon as they reached level ground they were put upon sagors (the country cart), and two buffaloes were then sufficient to cart away each log.

52. The cost of this might be approximately as follows:—

On bad ground where sagors cannot go, four buffaloes per log, travelling about two miles per day, at a cost of As. 8.

On cart tracks, flat ground and kutcha roads, two buffaloes per log, travelling about four miles per day, at a cost of As. 4.

On bridged roads, two buffaloes per log, travelling about eight miles per day, at a cost of As. 4.

Cost of floating, Re. 1-4 per 50 miles; this rate, which seems rather a high one, has been actually paid for floating logs from Bari Pada to Balasore, a distance by river of about 50 miles.

Cost of cutting down tree and shaping the log, As. 8.

53. Applying these figures to my working circles, we find:—

Cost of placing timber on the Balasore market—

	Rs.	A.	P.
From Eastern Working Circle	6	9	6
From Western „ „	4	14	0
On the Midnapore market—			
From the Eastern Working Circle	6	15	0
From the Western „ „	8	6	0

If we add for contingencies at the rate of Re. 1 per log, we then find that the most expensive route amounts to Rs. 9-6. Now, this timber sells in the Midnapore market at an average rate of Re. 1-8 per cubic foot; that is, each log of 30 cubic feet fetches about Rs. 45, and the cost of placing it on the market is Rs. 9-6.

This should allow of a rate of 4 annas per cubic foot for green standing sâl trees being charged by the State (trees to be measured with bark, and the total number of cubic feet in the trunk of the tree to be charged for). Take an example:—Suppose volume of tree to be 132 cubic feet; this at 4 annas per cubic foot costs the purchaser Rs. 33. Out of this tree he will probably cut two logs of 30 cubic feet each, all heart wood, which he will sell in Midnapore for Rs. 90, at the average rate of Re. 1-8 per cubic foot.

His expenses work out as follows:—

	Rs.	A
Royalty	33	0
Cost of placing on the market	18	12
Balance	38	4

The purchaser in this case will make over 30 per cent. profit. The rate in force in the Singhbhum Government Reserved Forests is 4 annas per cubic foot.

CHAPTER V.

MISCELLANEOUS FACTS.

54. *The forest staff.*—The local Subdivisional Officers, sardars and padhans, are supposed to look after the forests within the limits of their jurisdiction, but they don't.

The staff consists of one pass officer on the Balasore road and one vernacular clerk in the office of the Dewan of the State.

55. *Labour supply.*—Very cheap and practically unlimited, Moharbhanj being much used as a recruiting ground by the "cooly catchers." The rate per man per diem is 2 annas.

PART II.

CHAPTER I.

THE RESERVED FORESTS.

Section I. Area and boundaries.

56. As I have already treated of the former history, management and working, &c., of these forests in Part I of my report, it will be needless to recapitulate here, so I will at once proceed to administrative proposals.

57. The areas to be managed according to the proposals set forth in this chapter form the whole of the central group together with the hills situated to the north and south thereof. They will be divided into two ranges:—

I. The Simlipal Range.—Will include the whole of the central hill group, south of the Daspur-Midnapore road, and its boundaries will run parallel to the existing boundaries of the villages situated all round the foot of these hills.

The approximate boundaries will probably run thus:—

North.—Past the villages of Daspur, Dumaria, Boromora, Kodomdia, Orjanbila, Banki, Raguri, Manbandarkotas; then along road to south of Bidurbandar hill to Jamandiasi, Patarkuni, Sundasai, Kanchinda, Baragaon, Igilgodia, Nuagan.

South.—Past the villages of Kodiposi, Bisipoor, Kendomonda, Manikasai, Gorabindha, Mitwani, Sarubili, Kirkichipal, round south of Ratnapoor hill range to Koylelabu

East.—Past the villages of Nuagan, Kendua, along foot of hills past Dengan, Taldia, Latchmipur to Koylelabu.

West.—Past the villages of Daspur, Basantapur, Kumudabadi, Soroda, Atibari, Kuspoda to Kodiposi.

The forests on the hills to the south of the village of Komton, forming that part of South Mobarbhanj which juts out into Keonjhar, will also be included in the Simlipal Range.

II. The Saranda Range.—This range will include all the reserves to the north of the Daspur-Midnapore road, viz.:—

(*i*) the Ekdal Kendupani hills,
(*ii*) the Bodopal, Badampahar, Balapat hills running north-east to the Deonoe river;
(*iii*) the Guramasaini, Tongro, Satbakra hill ranges.

(*i*) *Ekdal Kendupani hills.*—The forest boundary will run approximately through the villages of Padampur north-eastwards along the Midnapore road for about three miles, and then northwards through the villages of Tambili, Patijori; from Patijora, south-westwards to Siltia, and then through the villages of Amtadia, Ramba, Gumpoda to Padampur.

(*ii*) *Bodopal to Deonoe river.*—The boundary will run approximately as follows:—South and east boundaries through the villages of Bogobondi, Noana, Bodopal, Siltia, Patijori, Potarkota, Kudunda, Puranapani, Kaduani, then bending eastwards along foot of hills to Bagdaga, and thence to Teltangia and Bijatora. The northern and western boundaries will run as follows:—From Bijatora through the villages of Korkachia, Osansikol, Kondodor, Bagabond, Todanpasi, Kasabada, Jodoboda, Toerda, Bagobondi.

(*iii*) *Guramasaini, Satbakra and Tongro hill ranges.*—Starting from Bissai on Daspur-Midnapore road, the boundary runs as follows:—Through the villages of Bissai, Saraskona, Toolia, Bonpokiria, Nokimipore, Banki, Tomra, Amda, Luasira, Balajodi, Jodia, Modansila, Belpahadi, Dokdia, Bodagaon, Hatia, Kolaisila, then along the Torono nadi to the State boundary, then eastwards along State boundary to Pakitia, from here southwards round Bhuda hill to Bijarguda, through Turhi, Badna to Midnapore road, along which the boundary runs eastwards to Bissai.

58. All boundaries of internal villages will remain as they are until the time of demarcation, when efforts will be made to straighten them, as much as possible, by mutual concessions.

59. *Area statement.*—I give below a statement showing the area of the Reserved Forests computed from the 4-miles-to-an-inch map of Mobarbhanj State, contained in sheets Nos. 114 and 115 of the Atlas of India. From this it will be gathered that the area of the—

	Sq. miles.
Simlipal Range = ...	922·35
Saranda Range = ...	116·87
Total area of the Reserved Forests ...	1,039·22

Area of the Reserved Forests.

Name of Forest.		Area in square miles.			Total.
		Productive.		Unproductive.	
		Containing mature sâl.	Not containing mature sâl.		
1		2	3	4	5
Simlipal Range ...	Simlipal Forest	331·7	210·70	334·48	876·88
	Ratnapur Hill Range Forest	.....	6·72	4·14	10·86
	Hill forest south of Komton village	.....	21·41	13·20	34·61
Saranda Range ...	Ekdal Kendupani Hill forest	.....	6·91	4·27	11·18
	Bodopal, Budampahar, Balapal Forest	.....	20·07	12·37	32·44
	Tongro, Satbakra, Garumasaini Forest	.....	45 31	27·94	73·25
	Total ...	331·7	311·12	356·40	1,039·22

Section II. Method of Treatment.

60. *Method of treatment adopted.*—This will merely consist of the removal of unsound and unpromising sâl trees and of trees other than sâl which will be sold from these forests, and it must be borne in mind that no sound sâl trees must, on any account, be supplied from any portions of Reserve Forest, except those included in the Working Plan.

61. All kinds of minor forest produce will be sold from the total area of the reserves.

62. *Object sought to be attained.*—It is hoped by these means to re-establish mature sâl forest over the whole area of the reserves, which at present only contain such forest in their remoter parts. It is expected that the area under mature sâl will be nearly doubled, and will then amount to 800 or 900 square miles, and when it is borne in mind that all these additions will be made in the more accessible portions (from which it has been removed in past years), it will be seen that their value will be enormously increased and will probably exceed that of any other forest in Bengal.

Section III. The fellings.

63. These will be entirely in the nature of improvement fellings with a view to encourage the growth of good, sound, and straight, heavy sâl timber.

The following classes of trees only will be removed:—

(*i*) Unsound and unpromsing sâl trees to the removal of which there are no sylvicultural objections.

(*ii*) Trees other than sâl to the removal of which there are no sylvicultural objections.

64. In executing the fellings, great care must be taken to preserve the continuity of the canopy in places where natural regeneration is as yet unestablished, the mother trees should be so close together as will allow of their crowns touching when swayed by the wind. On the other hand, in places where there is a well-established growth of young trees, it will be more advantageous to open the canopy out a little.

65. Another most important point to bear in mind is that the more valuable kinds of trees must be encouraged at the expense of their less valuable neighbours. In this connection I give a list of the most valuable timber trees in the order in which they should be considered at the time of felling:—

1. Sâl (*Shorea robusta*).
2. Kendu (*Diospyros Melanoxylon*).
3. Piasal (*Pterocarpus marsupium*).
4. Sisu (*Dalbergia latifolia* and D. *sissu*).
5. Behru (*Chloroxylon swietenia*).
6. Rohim (*Soymida febrifuga*).
7. Panjun (*Ougenia dalbergioides*).
8. Gambari (*Gmelina arborea*).
9. Karam (*Adina cordifolia*).
10. Asun (*Terminalia tomentosa*).
11. Siris (*Albizzia lebbek*).

Note.—For rules in force in the Reserved Forests, *vide* Appendix I.

CHAPTER II.

THE WORKING PLAN.

Section I. Basis of proposals.

66. *Working circles how composed; reasons for their formation.*—Two areas have been selected which contain the most accessible mature sâl timber now remaining; they are situated [illegible] as shown in the maps appended to this report.

67. The working circle which is situated on the eastern side of the great central hill group, is intended for the supply of mature sâl timber to the Midnapore, Balasore, and Calcutta markets, it is about 16 miles from Baripada as the crow flies, and very nearly due west of it; here we do not find mature sâl forest on the outer hills as on the western side, and we have to penetrate some distance into the hills before finding it. The area I have chosen is, on the whole, the most suitable I think; perhaps the chief objection to it is that the proportion of mature trees per unit of area is rather small, and there is no doubt whatever that there are many places where it is considerably larger, but then these latter places are so very inaccessible as to preclude successful working altogether; and indeed very little can be done even in the area I have chosen until the roads I have proposed to tap this working circle are completed. I have dwelt upon this point in another part of my report.

68. The western working circle, it will be noticed, is situated so as to contain the most accessible mature sâl forest on the western side of the hills; its chief advantage is its comparative accessibility, as it will only be necessary to construct about 10 or 12 miles of road over fairly easy country to connect with Daspur, and consequently with Midnapore, Balasore and Chaibassa, and in addition to this the contemplated road to connect Karanjia and Jaipur will be an additional outlet in the direction of Bhadrak and Balasore.

69. From the above two working circles I do not expect the least difficulty in disposing of the mature sâl, provided, of course, my proposals for improving their accessibility are adopted. It will, however, be difficult to dispose of the inferior stuff, which will militate somewhat against the sylvicultural success of the coupes; all we can hope for is that in a few years the forests will have been made so accessible as to have rendered this inferior stuff saleable, in which case their success will be assured.

70. *Compartments; justification of the subdivision adopted.*—As regards the compartments, they have been formed in the following manner:—The number of mature sâl trees contained in the whole area of the working circle has first been roughly computed by ocular estimation; each working circle was then divided into ten blocks containing an approximately equal number of exploitable trees which will be removed from each block successively by annual cuttings. In this case then the compartment consists of the whole blocks, the latter not being subdivided; thus the periodicity of the fellings is fixed at once every ten years.

71. The chief advantage in the above subdivision is its extreme simplicity, which is perhaps the best justification I can put forward in support of it.

Section II. Method of treatment.

72. *Object sought to be attained.*—It is intended to secure a systematic utilization of exploitable trees, and at the same time an improvement in the general health, condition and composition of the forest.

73. *Method of treatment adopted.*—Successive areas will be worked on a system of selection fellings, which will be conducted on the principles set forth in section III of this chapter; in each of the two working circles the conditions are sufficiently similar on all points to warrant exactly the same method of treatment which will accordingly be adopted in both; the system is thus one of "natural selection by compartments."

74. *The exploitable age.*—I give below a summary of the results of the measurement taken by me in these forests in this connection:—

Circumference of trees measured.	Number of sound trees.	Number of unsound trees.	Total number of trees measured.	Percentage of unsound trees.
1	2	3	4	5
6′—7′	1,766	305	2,071	14·72
7′—8′	1,030	379	1,409	26·89
8′—9′	306	233	539	43·23
9′—10	117	202	319	63·32
Total ...	3,219	1,119	4,338	.....

(For detailed measurements of trees, see Appendix No. V.)

75. The above figures would indicate 7′ as the exploitable limit. As between 7′ and 8′ girth, we have nearly 27 per cent. of the trees unsound, and between 8′ and 9′ over 43 per cent. Glancing at the remarks on the unsound trees in the appendix, it will be noticed that a very large proportion of them are either forked or have been mutilated in some way by unnatural agencies, and I noticed in all these cases that the primary seat of the unsoundness was either in the fork, or else proceeded from the mutilated area. As soon as the forest is put under scientific management and properly treated, all these forked trees will be eliminated, and mutilation by unnatural causes be checked, if not stopped altogether. This would at once greatly reduce the percentage of unsound trees, and the exploitable limit might be correspondingly increased with safety, even perhaps up to 8′ girth. Beyond this it would be unsafe to leave them, as they are liable to rot internally from the base upwards at about this period; the worst of this is that trees thus attacked give no outward sign of unsoundness, and it is, therefore, impossible to tell them until after felling, or until they are so far gone as to have

become hollow, which condition, of course, may then be detected by tapping the bole. Taking all things into consideration, I think it would be best to fix the limit at 7′ girth, but at the same time I would like to point out that in the best localities there would probably be very little danger in allowing the trees to attain a girth of 8′. This point, however, can only be settled by an examination of trees that have been felled, for this internal basal rotting and data will have to be collected from several years' fellings before the point can be finally decided upon. In the meantime the exploitable limit is fixed at 7′ girth taken at a distance of 4′ from the ground.

Section III. The fellings.

76. *General working scheme; calculation of the possibility.*—The whole scheme merely consists in removing the exploitable trees from the blocks in each working circle successively by annual cuttings. It is believed that the total number of exploitable sâl trees in each working circle may amount to between 10,000 and 15,000, that is to say, in the two working circles there are from 20,000 to 30,000 exploitable trees; therefore each block will contain from 1,000 to 1,500, and the annual possibility will lie between 2,000 and 3,000 trees, as two blocks, one in each working circle, will be worked yearly.

77. *Period for which the fellings are prescribed.*—This system of fellings may be carried on through one rotation which will be a period of ten years, at the expiration of which time the working circles should be examined with a view to deciding whether it may be continued through another rotation or whether a revision of the system would be advantageous.

78. As by the expiration of ten years all the roads I have prescribed will have been completed, it will then be possible to work a very much larger area of mature sâl on scientific principles, and all the then workable areas should be examined with a view to bringing them under the provisions of the working plan, which could be done by adding new working circles to be worked on the system enunciated in this chapter for the existing working circles.

79. *Areas to be felled.*—The areas to be felled annually consist of two whole blocks, one in the eastern and one in the western circle; in either case the most accessible block will be taken in hand first; the order of their allotment is as follows:—

Eastern Working Circle.

Area to be felled.	Year of felling.	Area to be felled.	Year of felling.
Block I	1895-96	Block VI	1900-1
„ II	1896-97	„ VII	1901-2
„ III	1897-98	„ VIII	1902-3
„ IV	1898-99	„ IX	1903-4
„ V	1899-1900	„ X	1904-5

Western Working Circle.

Area to be felled.	Year of felling.	Area to be felled.	Year of felling.
Block I	1895-96	Block VI	1900-1
„ II	1896-97	„ VII	1901-2
„ III	1897-98	„ VIII	1902-3
„ IV	1898-99	„ IX	1903-4
„ V	1899-1900	„ X	1904-5

80. *Nature and mode of executing the fellings; forecast of the condition of the crop at their conclusion*—The following classes of trees only will be felled in the course of the year:—

(*i*) Mature sâl trees, *i.e.*, trees over 7′ girth at a distance of 4′ from the ground.
(*ii*) Crooked, unpromising and unsound sâl trees of all sizes.
(*iii*) Trees other than sâl of all sizes, always provided that there are no sylvicultural objections to their removal.

81. In executing the above fellings the same principle must be borne in mind as I have enunciated in paragraphs 64 and 65; but I should again like to draw attention to the absolute importance of keeping a good canopy overhead in the early stages of regeneration. If blanks are created, the soil will be very soon dried up under the intense heat of the sun in the dry weather, and the seedlings, if not killed altogether, suppressed by the rapid-growing grasses and bamboos.

82. As regards the condition of the crop at the conclusion of the fellings, it will be found to be much healthier and also to contain a larger proportion of the more valuable species.

Note.—For detailed description of all the blocks in the two working circles, with proposals for their exploitation, see Appendix No. IV. Maps of the two working circles are attached to the Appendix.

CHAPTER III.

THE PROTECTED FORESTS.

Section I. Area and boundaries.

83. The protected forests will include all the existing forests in the State other than those mentioned in Part II, Chapter I, as reserved forests, and their total productive area amounts to 1,119·48 square miles, using the figures obtained in paragraphs 15 and 59. The waste amounts to 758·57 square miles, and it is intended that the treatment enunciated in this chapter should be applied, as far as possible, to this area also.

84. With regard to the boundaries, no attempt at a demarcation is at present possible, so the existing boundaries of the adjacent villages will be taken.

Section II. Method of treatment.

85. *Method of treatment adopted; object sought to be attained.*—The object in view here is to keep the inhabitants of Moharbhanj State fully supplied with all kinds of forest produce, and at the same time to re-establish mature sâl forests in place of the existing pole forests and scrubs, to protect the more valuable of the trees other than sâl, and to re-afforest the waste lands, wherever possible.

86. Bearing in mind the object in view, we find that the requirements of the people are as follows:—

(*i*) Poles of 2′ to 3′ girth for the construction of their houses.
(*ii*) Trees of mature size for the construction of their agricultural implements, carts, cart-wheels, oil presses, &c., &c.
(*iii*) Minor produce, *i.e.*, grass for thatching, bamboo, &c.
(*iv*) Firewood.

For their house-building and firewood they pay a cess. So those two items will have to be supplied them at any cost, as they have a right.

87. As, owing to the enormous distribution and patchy nature of these forests, it will be quite impossible to provide any protective establishment at present, it is proposed to use every means to interest the village padhans and the sardars in their preservation, and their efforts should be principally directed against fire, which they should be required to keep out of the forests adjacent to their respective villages, and as a reward, the successful ones might have their house-building and firewood free of the cess above mentioned.

The padhans should also be induced, as far as possible, to select trees for their use from different parts of the forests, and not to centralise all their cutting operations in one place so as to produce blanks, as is their present practice.

Section III. The fellings, &c.

Note.—For rules relating to the general management of the Protected Forests, see Appendix I—Rules in force in the Moharbhanj State Protected Forests.

CHAPTER IV.

GENERAL PROPOSALS RELATING TO THE WHOLE AREA OF THE STATE FORESTS.

Section I. Staff.

88. The following staff will have to be entertained if the forests are to be properly looked after:—

One Extra Assistant Conservator of Forests, who will hold charge of the entire area of the Reserved and Protected Forests.

Two forest rangers.	Fifty forest guards.
Four foresters.	Two office clerks.
Six drift depôt muharrirs.	One office peon
Four personal peons.	One caretaker.

The above establishment will be distributed as follows:—

The Simlipal Range.—The senior ranger will hold charge of this range; his head-quarters will be at Daspur on the Sambalpur Road; under him will be three foresters with head-quarters situated at intervals around the great central hill group, namely, at the villages of Bisipoor, Koylelabu, and Bonkati.

Twenty-four forest guards will be placed at intervals of about 10 miles all round the base of the great central hills group at the villages of Kumebadi, Sarda, Atibari, Kodiposi, Bisipoor, Manikasahi, Gorabindha, Kirkichipal, Koylelabu, Burkoma, Taldia, Kusumjhati, Sonabadi, Sorsobila, Unagaon, Kantasula, Kanchinda, Kusumbani, Patarkum, Bisai, Banki, Boromara, Dumuria, Daspur.

Three forest guards at the following villages in the interior of hills:—Bamungan, Simlipal, and Kusmi.

Three forest guards at Satkosia, Ladha, and Jadipada, to protect the Ratnapur hills and the hills to the south of Komtom, which form part of this Simlipal Range.

Two guards will be stationed in each working circle to superintend the cuttings in the coupes, *i.e.*, four guards.

Total for Simlipal Range—

One ranger.
Three foresters.
Thirty-four forest guards.

89. *The Saranda Range.*—This will be in charge of a ranger living at Saranda; under him will be one forester, living at Dudichua, who will look after the western part of the Saranda Range, *i.e.*, the Ekdal Kendupani and the Bodopal, Badampahar, Balapat hill range forest.

Sixteen forest guards will be placed at the following villages:—

For the Gurumasaini, Satbakra and Tongro forests:—At Saranda, Bisai, Kopadia, Pakitia, Tandipani, Kulsibonga and Andia; for the Ekdal Kendupani hill forests at Siltia and Daspur; for the Bodapal, Badampahar and Balapat forests at Bijatora, Kondadar, Bagobandi, Kasoabada, Dudichua, Bodopat, Potorkota and Kaduani.

Total for Saranda Range—

One ranger.
One forester.
Sixteen forest guards.

Drift establishment.—One depôt muharrir will be required at each of the salvage stations mentioned in Appendix V of the Rules and Regulations, if it is found worth while to establish them.

Section II. Revenue and Expenditure.

90. *Revenue.*—

	Rs.
IIa. Timber—From the two Working Circles coupes 2,000 trees, averaging 80 cubic feet each, *i.e.*, 160,000 cubic feet, at annas 4 per cubic foot	40,000
IIb. Firewood and *charcoal*, including everything supplied to the inhabitants and house-building woods from the protected forest ... ... This being the amount realized last year from the inhabitants on account of the cess for their house-building and firewood, &c.	24,000
IId. Grazing and fodder grass	5,000
IIe. Other Minor Produce.—Under this head at least the same revenue should be made as last year. Over Rs. 6,000 was received under the Lease system, and the total bazar value of the minor forest produce exported was over a lakh of rupees	10,000
III. Drift and waif wood and confiscated forest produce.—Rs. 3,000 may be put down under this head, but it is difficult to speak with any certainty in the absence of any previous operations of this kind	3,000
V. Miscellaneous, includes annual licenses collected under Rule 5 III of the Rules for Protected Forests	5,500
Total Revenue ...	87,500

As soon as the establishment settles down a bit and gets in working order, there should be no difficulty in securing the above revenue, and for the year 1895-96 I shall expect this figure to be equalled, if not surpassed. With regard to future years, the prospect seems to be even better, as the doubling, and even trebling, of the above revenue will merely be a question of opening out the more inaccessible parts of the forests.

91. *Expenditure.*—

	Rs.
A. Ie. Grass and other minor produce removed form the forest by Government agency.—	
To start a trial depôt in Baripada	1,000
A VIb. Feed and keep of cattle—Four elephants, two for Divisional Officer, and one for each of the Range officers—	
Feed and keep Rs. 25 per month each	1,200
Eliphant establishment—	
4 Mahuts at Rs. 6	606
4 Mates at Rs. 4	
Travelling allowance Rs. 63	

		Rs.
A. VIc.	*Purchase of stores, tools and plant—*	
	12 50′ tapes ... ... 12 100′ tapes ... ... 3 F. D. hammers ... 3 F. D. sale hammers ... 6 Callipers ... ... 50 Belts and pugries for forest guards. 2 Khaki uniforms for rangers 4 Khaki uniforms for foresters Survey instruments ... Office and Range House furniture, &c.	1,000
	Total A.VI & A.I	3,806
A. VII (a).	*Roads and Bridges—* Inspection paths and feeder roads for the exploitation of the two working circles ... ... (This does not include the main roads, which will be constructed by the State Engineer, on which about Rs. 20,000 a year should be spent until they are completed.)	3,000
A. VII (b).	*Buildings.*—Two houses for Rangers, one at Daspur, and one at Saranda, at Rs. 1,000 each	2,000
	Total of A. VII ...	5,000
A. VIII (a).	*Demarcation.*—Two hundred miles of boundary clearing at Rs. 10 per mile	2,000
	Two thousand boundary pillars, sál poles, at Re. 1 each, including cost of erection	2,000
A. VIII (f).	*Other works*	1,000
	Total of A. VIII	5,000
A. IX (c).	*Other charges*	150
	Grand Total of A	13,956
B.I (b).	*Salaries, Superior Officers.*—Pay of Extra Assistant Conservator at Rs. 150 per mensem	1,800
	Pay of Ranger at Rs. 50	600
	Pay of „ at „ 40	480
	Total B.I (*b*) ...	2,880
B.I (c).	*Subordinate forest and depôt establishments.*—Four foresters on Rs. 15	720
	Six drift depôt muharrirs on Rs. 10	720
	Four personal peons on Rs. 6	288
	Fifty forest guards on Rs. 6	3,600
	Total B.I (*c*) ...	5,328
B.I (d).	*Office establishments.—* One clerk on Rs. 30	360
	One clerk on Rs. 15	180
	One office peon on Rs. 6	72
	One caretaker on Rs. 5	60
	Total B.I (*d*) ...	672
	Total B.I ...	8,880
B.II (b).	*Travelling allowances, Superior Officers.*—Travelling allowances of Extra Assistant Conservator at Rs. 4 per day, and two rangers at annas 8 per day, and four foresters at annas four per day for nine months	1,620
B.II (c).	*Subordinate forest and depôt establishments.*—Travelling allowances of 50 forest guards at anna 1 per day and six depôt muharrirs at annas two per day, and four personal peons at anna 1 per day for nine months	1,271
B.II (d).	*Office establishments.*—Second clerk at annas 4 per day for nine months	68
	Total B.II	2,959
B.III (a).	*Stationery*	300
B.III (e).	*Official postage*	100
B.III (f).	*Sundries*	100
	Total B.III	500
	Total B establishments	12,339
	Grand Total of expenditure	26,295
	Surplus	61,205

(Drawn up according to Forest Department Form No. 61.)

Section III.—Miscellaneous prescriptions.

92. *Roads.*—An extremely important point to be impressed upon the Raja is this: that if he wants to sell his timber he must make it accessible, and to this end I should advise the following roads:—

(1) For the opening out of the forests in the central hill group generally, and the eastern working circle in particular, a road will have to be constructed connecting the latter with Baripada. This road should run from Baripada eastwards up the Podpoda river valley to Simlipal, and this section of it should be begun at once and pushed on as rapidly as possible; in the following year a further section should be taken up, carrying the road to Simlipal; from here it may be carried on to Daspur approximately close to the dotted blue line indicated in the 4 miles = 1 inch map in the appendix, (Appendix III).

The approximate cost of this road may be estimated at about Rs. 70,000, as its length will be about 70 miles and the cost about Rs. 1,000 per mile on the average; it will be made so that it is possible for the country carts to go along it.

(2) Another road for immediate construction is from Sarda to Daspur for the opening up of the western working circle; its cost will be about Rs. 1,000.

(3) It will also be necessary to make a road from Bonkati to Sirsa for the export to Midnapore of the produce from the eastern working circle; approximate cost Rs. 1,000, *i.e.*, length of 5 miles at Rs. 200 per mile.

93. In addition to the above roads, which are the more urgent, the following will also have to be constructed before the forest can be regarded as even fairly accessible:—

(4) The old Sambalpur-Midnapore road between Bisai and Sirsa must be put in order, as it will be an important export road to Midnapore for the forest produce from the Saranda range; approximate cost Rs. 2,000, *i.e.*, length 10 miles at Rs. 200 per mile.

(5) Kirkichipal to Bisai for the further opening out of the immense forests of the central hill group. This road will run from south to north through the centre of the hills, and will cut the proposed Baripada-Daspur road more or less at right angles; it should meet the Daspur-Midnapore road somewhere between Bisai and Monda, and in the south will cut the Karenjia-Takurmunda-Jaipur road which is shortly to be constructed. This road will be about 80 miles long and will cost, at Rs. 1,000 per mile, Rs. 80,000.

(6) Another road is required to tap the Garumasaini, Satbakra and Tongro hill forests of the Saranda range: it may be constructed from Bisai on the Daspur-Midnapore road, and should reach the northern boundary of the State somewhere near Kalsibonga. The approximate cost may be about Rs. 10,000, as it will be about 20 miles long and cost about Rs. 500 per mile.

94. The above six roads will constitute the main export roads for forest produce, and should be constructed with as little delay as possible. From these six principal roads as a base, feeder roads and inspection paths will have to be constructed, but their ultimate direction can best be determined from year to year as the necessity for them arises.

95. It will be seen that the approximate cost of these six roads is Rs. 1,64,000, and I think the Raja should be prepared to spend at least from Rs. 20,000 to Rs. 30,000 per annum on them until they are completed.

I think it would be advisable for these six main roads mentioned to be constructed by the State Engineer, and be budgeted for by him; the Forest Officer will be responsible for the feeder roads and inspection paths.

96. On the completion of these six roads mentioned in the preceding paragraph, it will then be possible to bring a much larger proportion of the forest under the working plan. New working circles must be made and worked on exactly the same principles as set forth in Part II, section II.

The approximate direction of the proposed roads is shown by dotted red lines in the 12 miles = 1 inch map, Appendix II, and by dotted blue lines in the 4 miles = 1 inch map, Appendix III.

It is useless my attempting at this period to lay down the boundaries of the new working circles; subsequent events, such as the development of the markets, the actual alignment of the roads, &c., can alone determine this (see my remarks in paragraph 75 in this connection).

97. *Minor produce.*—Turning to Part I, Chapter IV, paragraph 47, the necessity of dealing with it differently is apparent, as, besides what I have already noticed, the Raja tells me that the pargana lessees oppress the people badly, in some places causing them to leave the district. I propose dealing with it in the following manner:—

(*i*) Permits to collect specified amounts will be issued by the Forest Officer, on forms like form No. 14, in use in the Government Reserves.

(*ii*) Areas will be leased out to contractors to collect certain products within their limits, and within a certain time, which items will be specified on the permit (Government, Forest Department Form No. 14).

(*iii*) Minor produce may be collected in State depôts where it could be stored for future sale. A trial depôt might be made this year in Baripada, and the products for sale advertised in the Balasore and Midnapore markets. If this were done and suitable rates fixed, I do not think there will be any difficulty in selling as much as could be collected.

98. *Tussur cultivation.*—This is a practice which should not be allowed to private individuals, except under state supervision, as it invariably ends in the complete destruction of the forest in the areas under cultivation.

I would suggest that the chief tussur-producing localities be examined with a view to putting them under some systematic form of management. Different areas should be chosen and worked in a fixed rotation, so as to allow the trees time to recover themselves before cultivation is resumed. I cannot possibly undertake this work myself, but would recommend one of the State Revenue Officers being deputed to examine and report on these localities, and then to submit his report to the Forest Officer in charge of the state forests for consideration.

99. *Fire protection.*—The working circles should be protected by fire lines; the boundaries should be widened to serve this purpose, to a width of 30 feet.

General measures must be taken to protect the rest of the Reserved Forests: the guards must be set to watch the people living on the edge of the forest; guards will also be posted at each of the internal villages for the same purpose; if necessary, an increased number of temporary fire patrols should be entertained during the fire season, and the more frequented cooly tracks through the forests be specially watched.

THE END.

DATED BARIPADA,

The 15th January 1895.

C. C. HATT,

Asst. Conser. of Forests on Foreign Service to the Moharbhanj State.

APPENDIX I.

RULES MADE UNDER THE INDIAN FOREST ACT, VII OF 1878, HAVING FORCE IN THE STATE OF MOHARBHANJ.

Preliminary.

(*a*)—*General Powers of Forest Officers* (*sections* 2, 24, *and* 75*a*).—The officers of the Forest Department of Moharbhanj State, mentioned in the 1st column of the following schedule, shall exercise the powers of "Forest Officers" under the sections of the Forest Act mentioned in the second column of the same, over against each such class of officers separately :—

Class of officer empowered.	Section of the Act under which powers are given.	Brief description of nature of powers conferred.
1	2	3
I. To the Extra Assistant Conservator of Forests in charge of the Moharbhanj State Forests.	20	Power to publish translation of notification of Reserved Forests.
	25	Power to permit prohibited acts in Reserved Forests.
	33	Power to permit prohibited acts in Protected Forests.
	45	Power to notify depôts for drift timber, &c.
	46	Power to issue notice to claimants of drift timber, &c.
	47	Power to decide claims to drift timber.
	50	Power to receive payments on account of drift timber, &c.
	60	Power to direct release of property seized.
	67	Power to compound offences.
	82	Power to sell forest produce for State dues.
II. All Rangers and Foresters in charge of a range when specially authorised in that behalf by the Extra Assistant Conservator in charge of the State Forests.	25	Power to permit prohibited acts in Reserved Forests.
	33	Power to permit prohibited acts in Protected Forests.
	60	Power to direct release of property seized.
	67	Power to compound offences.
III. All Rangers, Foresters, and Forest Guards, whether on permanent or temporary establishments.	45	Power to collect drift timber, &c.
	52	Power to seize property liable to confiscation.
	55	Power to take charge of State or confiscated property.
	56	Power to accept charge of property when offender is unknown.
	63	Power to arrest without warrant in certain cases.
	69	Power to seize and impound cattle trespassing.
	82	Power to take possession of produce under State lien.

2. The Extra Assistant Conservator of Forests in charge is empowered to exercise all or any of the powers conferred on his subordinate officers in the foregoing schedule.

3. The Extra Assistant Conservator of Forests in charge is empowered, under section 24 of the Act, to stop ways and watercourses in reserved forests subject to the provisions of that section.

b—*Grant of rewards, section* 75(*b*).—1. All State Officers and persons not in the employ of the State are eligible for rewards under these rules.

2. The Magistrate or the court imposing the fine is bound to inform the Forest Officer in charge of the State forests of the levy of the fine, and the whole or any part of the fine, when realised, may be distributed in such proportions as that officer may think fit among the persons instrumental in the detection of the offence, the seizure of the articles, or the capture of the offender. Besides the amount of the fine, the said persons shall be entitled to share the whole or part of the proceeds of the sale of the confiscated articles. The Forest Officer aforesaid may also, out of the fine realised, award compensation to any person subjected to annoyance or injury in connection with the proceedings in which the fine was imposed.

3. Rewards granted under these rules shall be disbursed at once, if they are less than Rs. 100. If they are over Rs. 100, that sum only will be disbursed at once, and the rest after the period of appeal has expired, or the appeal has been rejected. In the event of the conviction being reversed on appeal, the amount paid in rewards shall not be recovered from the persons to whom it has been paid, unless it shall appear that they have acted fraudulently.

4. In cases where, under section 67 of the Indian Forest Act, a Forest Officer has accepted a sum of money as compensation for any damage which has been committed, the Extra Assistant Conservator of Forests in charge may authorize the payment of a portion of the amount realised as a reward to any person who may have contributed to the discovery of the offender.

Rules for Reserved Forests.

Rules applicable to all areas in Mohurbhanj State that have been or may hereafter be declared Reserved Forest.

(*a*)—*Hunting, shooting and fishing, section* 26(*f*).—1. No person shall in such Reserved Forest, unless it be necessary in defence of the life or limb of himself or some other, kill or wound any elephant, or catch or attempt to catch elephants.

2. No person shall in such Reserved Forests set snares or traps.

3. No hunting, shooting or fishing may be practised by any person whatsoever, except he be a *bonâ fide* inhabitant of Mohurbhanj State and the game is required for his own personal needs or for those of his household. Professional huntsmen and dealers in skins and horns, &c., must obtain permits from the Forest Officer and submit their produce for inspection before export; the Forest Officer will then estimate its value and deduct 25 per cent., on payment of which sum the Forest Officer will give an export pass. The payment for each firearm used by these people will be at the rate of Rs. 10, and each permit will run for six months, *i.e.*, from the 1st October to the 31st March. (These rules are also applicable to Protected Forests, *mutatis mutandis*.)

4. Nothing in the above rules shall be deemed to prohibit any act done with the permission in writing of the Extra Assistant Conservator of Forests in charge.

5. Between 1st April and 30th September, both days inclusive, in each year the killing of the following animals and birds is prohibited :—

All kinds of deer and antelope.

Hare.	Peafowl.
Pheasant.	Florican.
Partridge.	Jungle fowl.

Also all kinds of ducks and geese that breed in the country and all kinds of teal.

Rules for Protected Forests.

(*a*)—*Reservation of trees* (*section* 29).—The Raja is pleased, under section 29 of the Indian Forest Act, to declare the following classes of trees to be reserved in the Protected Forests of the State from the date of this notification, namely—

1. Sâl (*Shorea robusta*).
2. Piasal (*Pterocarpus marsupium*).
3. Sissu (*Dalbergia sissu, D. latifolia*).
4. Kendu (*Diospyros melanoxylon, D. embyopteris*).
5. Kusamb (*Schleichera trijuga*).
6. Asun (*Terminalia tomentosa*).
7. Hara (*Terminalia chebula*).

8. Bahera (*Terminalia belerica*).
9. Mango (*Mangifera indica*).
10. Tamarind (*Tamarindus indica*).
11. Mohul (*Bassia latifolia*).
12. Jack (*Artocarpus integrifolia*).
13. Bel (*Aegle Marmelos*).
14. Nim (*Melia azadirachta*).
15. Kuchila (*Strychnos nux vomica*).
16. Behru (*Choloroxylon swietenia*).
17. Rohin (*Soymida febrifuga*).

(*b*)—*Prohibition* (*section* 31)—and to prohibit in the said forests the following acts:—

(1) The quarrying of stone.
(2) The burning of lime and charcoal.
(3) The collection or subjection to any manufacturing process or removal of any forest produce.
(4) The breaking up or clearing of any land for cultivation, for building, for herding cattle or for any other purpose.

(*c*)—*Rules*.—1. The Moharbhanj State Protected Forests shall be under the management of the Forest Officer in charge of the Reserved Forests.

2. Green trees of the 17 species reserved under section 29 may not be felled, cut, lopped, or in any way injured, without the written permission of the aforesaid Forest Officer, and such permission will only be given in behalf of some public object. The material yielded by the operations can be disposed of as the Forest Officer may decide, and all revenues realised from this source must be credited to the Forest Department.

3. All trees and timber, not belonging to the classes reserved under section 29, have been set aside for the use of *bonâ fide* residents of the State, and may not be felled, cut, collected or removed, except as provided for in these rules.

4. The following classes of trees may be felled and removed for the following purposes only:—

House construction and repair, manufacture and repair of household and agricultural implements and furniture.

These trees must on no account be cut for firewood, fencing material, or for any other purpose than that mentioned above without the Forest Officer's written sanction.

1. Goumari (*Gmelina arborea*).
2. Karam (*Adina cordifolia*).
3. Panjun (*Ougenia dalbergioides*).
4. Dhau (*Anogeissus latifolia*).
5. Siris (*Albizzia lebbek*).
6. Champa (*Michaelia champaca*).
7. Koombi (*Carya arborea*).
8. Jam (*Eugenia jambolanum*).

5. Subject to the conditions contained in rule 4, trees not reserved under section 29 and dry trees and dry timber of all species excepting sâl, piasal and sissu, and all other forest produce whatsoever (with the exception mentioned in rule 10), may be felled, cut, collected and removed by every *bonâ-fide* inhabitant of Moharbhanj State, provided—

(i) That the produce shall be required for personal use and shall not be sold or bartered except to persons privileged under these rules, who will then be bound in the same way.
(ii) That a payment calculated at 6 pies in the rupee of his rent or such other amount as may be from time to time fixed by the Raja shall be realized by the Dewan of the State from every rent-paying raiyat in Moharbhanj and credited to the Forest Department as forest revenue on account of general use of the protected forests.
(iii) That where the user is a blacksmith, potter, dhobi, or other person following some industry which consumes an unusually large quantity of fuel, such user shall obtain from the Forest Officer an annual license, the cost of which shall be Re. 1 or such other rate or rates as may from time to time be fixed by the Raja.

6. Grazing will be allowed to all *bonâ-fide* inhabitants of Moharbhanj State, provided—

(i) That if the necessity arises, professional graziers of goats and sheep agree to graze such animals in special localities which will be set aside by the Forest Officer.
(ii) All professional graziers shall pay the following grazing fees :—

Buffaloes—8 annas per annum or for any period of less than one year.
All other animals—4 annas per annum or for any period of less than one year.

7. No land in the Moharbhanj State Protected Forests may be cleared for temporary cultivation on any account whatever.

8. Before granting leases for cultivation involving the destruction of forest, the Forest Officer must be consulted by the Revenue Officer granting the lease, and in the event of the officers differing in their opinion, the matter will be settled by the Raja before any cutting or clearing is allowed to take place.

9. Tapping for resin is prohibited throughout the whole area of the State forests; it may be collected from natural exudations only.

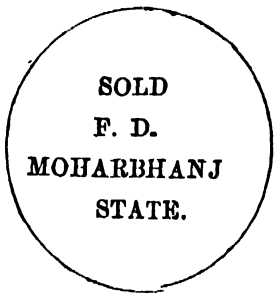
10. The subdivisional revenue officers, sardars and padhans will be held responsible for the proper enforcement of all rules relating to the Protected Forests situated within their respective jurisdictions.

Rules for the control of timber and other forest produce in transit.

Section 41.—1. All timber and other forest produce for export must be taken along one of the following authorized routes at any point along which it is liable to stoppage and examination by any forest or police officer when there is reason to believe that anything is payable to the State in respect of such timber or forest produce :—

(i) Daspur-Midnapore road (leaving Moharbhanj by the Sirsa ghat).
(ii) Baripada-Balasore road (leaving Moharbhanj by the Kalma Pass Office).
(iii) Baripada-Chaibassa road (leaving Moharbhanj by the subdivisional station of Boholda).
(iv) The Burabalung river.
(v) The Kodkai river.
(vi) The Salandi river.
(vii) The Sooni river.
(viii) The Jamira river.

2. No timber will be allowed to be taken across the State boundary unless it bears the mark of the Forest Officer's sale hammer, thus :—



and the bearer holds an export certificate signed by the Forest Officer in charge of the State Forests.

3. All timber not bearing this mark, and all timber and other forest produce being exported by anybody without an export certificate, or by an unauthorized route, will be confiscated by the State.

4. All Revenue and Police Officers of the State as well as Forest Officers are hereby authorized to seize such forest produce as liable to confiscation under section 50 of the Indian Forest Act.

5. The closing up or obstructing of any river used for the transit of timber or forest produce, or the stoppage of navigation of the same, is prohibited. The Forest Officer may order any person, who by his act or negligence has caused such closure, obstruction or stoppage, to remove the same within a time specified, or may cause such obstruction to be cleared, and recover the cost of such clearance from the person by whose act or negligence it was caused.

Rules for the collection of drift and stranded timber.

The Raja is pleased to direct that, under the last clause of section 45 of the Indian Forest Act, 1878, all pieces of timber measuring less than six feet in length and three feet in girth shall be exempted from the provisions of the said section.

2. The drift timber depôts will be situated at the places where the following rivers meet the boundary of the State :—

1. The Burabalung.
2. The Kodkai.
3. The Sooni.
4. The Salandi.
5. The Jamira.
6. Koirobondono.

Subsidiary Rules.

1. (*a*) *Fire protection* [*section* 75 (*d*)].—Any person found setting fire to the Reserved or Protected Forests of Moharbhanj State shall be punished with imprisonment of either description, which may extend to six months, or with fine, which may extend to Rs. 500, or with both.

2. All village sardars and padhans who shall have successfully kept fire out of the Protected Forest adjacent to their villages for a whole year, shall have the general use of such Protected Forest at one-half the usual rate for the year in question, and for each succeeding year in which they may be equally successful.

3. Any person living in the vicinity of a State Forest Reserve, or occupying or using land in such vicinity, and desirous of clearing by fire any standing forest or grass land near that reserve, in a locality from which such fire would be likely to endanger the reserve, shall observe the following rules:—

(*i*) He shall give notice of at least one week to the nearest officer, Ranger, or Forester of his intention.

(*ii*) He shall clear a belt of land at least 20 feet broad on the side of the land he proposes to burn nearest to the forest reserve.

(*iii*) He shall choose for such burning a day or time when a high wind is not blowing.

(*iv*) He shall light the fire in a direction contrary to the prevailing wind.

4. Any person desirous of burning, on land adjoining a forest reserve, wood, grass or weeds or other cut material, shall collect that material into heaps, and burn it separately in such a way that fire may not endanger the forest reserve.

5. Any person collecting inflammable forest produce, such as grass and bamboos, on land adjoining a forest reserve, and any holder of a permit, to collect such materials from the forest reserve, shall stock the material so collected in an open space, as far removed as possible from the forest.

6. All persons travelling on roads passing through or along the boundary of a forest reserve shall camp only at such places as may be cleared and set apart for the purpose of camping grounds by the Forest Officer, who shall yearly publish a list of such grounds in the vicinity of the Reserved Forest. Camping at localities other than those set apart is forbidden, and all persons so camping shall light any fires they may make for cooking or other purposes in such a way as not to endanger the Forest Reserve or the buildings or property on the camping ground, and they shall extinguish all such fires before leaving the camping ground.

7. The carriage of burning wood, firebrands, or torches through or along the boundary of any Reserved Forest, is prohibited.

APPENDIX IV.

DETAILED DESCRIPTION OF THE SEVERAL BLOCKS IN THE EASTERN AND WESTERN WORKING CIRCLES.

Eastern Working Circle.

Block I.

	Well stocked.	Poorly stocked.	Total.
Area ...	4·83	·60	5·43 sq. miles.
	3,091·20	384·00	3,475 acres.

Boundaries—

North and East.—The ridge forming the right-hand side of the valley of the Kodkai river as shown in the map.

South.—The ridge dividing the waters of the Podpoda river from the head waters of the Kodkai and forming part of the north boundary of Block II.

West.—The ridge dividing the waters of the two tributaries of the Burabalung river, whose valleys form Blocks V and VI, from the waters of the Kodkai river.

Situation, configuration and aspect.—Block I consists of the valley in which the Kodkai rises; the upper parts of the ridge which form the west boundary are in places very precipitous. Elevation between 2,000 and 3,000 feet.

Soil.—For the most part rocky; a reddish, sandy clay chiefly, containing plenty of leaf mould in places. Underlying rock is volcanic. In places we have much iron and indication of copper and also large quantities of laterite. This applies to all the blocks of the Working Circle.

Crop.—Sâl forest of all ages with some mixed forest in the lower and deeper localities; from the northern portion of the block the larger trees have been removed; a good number of exploitable trees, however, remain in the southern portions.

Roads.—1. A road should be made from the southern boundary of the block running northward along the Kodkai river past Jhinkghara to Bamunkund (it might be constructed approximately on the line of Mr. Wylly's old trace).

Length 12 miles, at Rs. 200 per mile = Rs 2,400.

2. Rupees 500 should be spent in improving the existing track between Bamunkund and Bankati.

Total for Block I=Rs. 2,900.

Block II.

	Well stocked.	Poorly stocked.	Total.
Area	3·30	·30	3·60 sq. miles.
	2,112·00	192·00	2,304 acres.

Boundaries—

North.—The Kusumboni hill range which runs eastwards from Kusumboni to Joah hill.

South.—The Podpoda river.

East.—The ridge running southwards from Joah hill to the Podpoda river.

West.—Tributary of the Podpoda river which rises a short distance eastwards of Kusumboni hill as shown in map.

Situation, configuration and aspect.—This block forms the left-hand side of the Podpoda river valley from Kusumboni to Joah hill; upper slopes in places very precipitous; the western end of the block does not consist of nearly such steep slopes as the eastern. Elevation 2,000—3,000 feet.

Soil.—As in Block I.

Crop.—Same composition as in Block I and indeed in all the other blocks; the western end appears to have formerly contained old cultivation, as the forest is thin and open and denuded of its large trees in places. A good deal of bamboo was noticed in the eastern portions.

Roads.—1. The main road from Baripada to Simlipal will run along the south boundary of the block, in which case no feeder roads will be required to be constructed by the Forest Department.

Total for Block II=Re. 0.

Block III.

	Well stocked.	Poorly stocked.	Total.
Area	7·05	1·00	8·05 sq. miles.
	4,512·00	640·00	5,152 acres.

Boundaries—

North—The Podpoda river.

South.—The ridge forming the south boundary of the Podpoda river valley and its tributary.

East.—The same ridge which forms the south boundary turns northward and forms the east boundary as well.

West.—A tributary of the Podpoda river as shown in the map.

Situation, configuration and aspect.—This block forms that part of the right-hand side of the Podpoda river valley which lies due south of Joah hill. Elevation 2,000—3,000 feet. General aspect is north.

Soil and crop.—As in other blocks.

Roads—1. The main road from Baripada to Simlipal will run along its northern boundary.

2. A road will be required running southwards from the above through the centre of the block; it should follow the stream more or less as shown in the map.

Length 5 miles, at Rs. 200 per mile = Rs. 1,000.

Total for Block III = Rs. 1,000.

Block IV.

	Well stocked.	Poorly stocked.	Total.
Area	4·00	·47	4·47 sq. miles.
	2,560·00	300·80	2,860 acres.

Boundaries—

North.—The Podpoda river.

South and West.—The ridge forming the watershed between the waters of the Podpoda and Burabalung rivers (this is the same ridge that forms the east and south boundaries of Block III).

East.—The west boundary of Block III.

Situation, configuration and aspect.—Forms that portion of the right-hand side of the Podpoda river valley immediately above Block III. General aspect is northerly. Elevation 2,000—3,000 feet.

Crop and soil.—As in other blocks of this circle.

Roads—1. The main road from Baripada to Simlipal will run along the northern boundary.

2. Another road should be constructed more or less through the centre of the block following approximately the course of the stream as shown in the map.

Length 5 miles, at Rs. 200 per mile = Rs. 1,000.

Total for Block IV = Rs. 1,000.

Block V.

	Well stocked.	Poorly stocked.	Total.
	4 00	·89	4·89 sq. miles.
Area	2,560·00	569·60	31,30 acres.

Boundaries—

North.—Ridge running eastwards from the Burabalung river to the north-west corner of Block I, as shown in map.

South.—Ridge running eastwards from the Burabalung river and meeting the west boundary of Block I, above Jhinkghara.

East.—Part of the west boundary of Block I.

West.—The Burabalung river.

Situation, configuration and aspect.—This block forms the valley of a tributary of the Burabalung river; the eastern portion, *i.e.*, the higher, is not nearly so precipitous as the western or lower portions towards the Burabalung river. General aspect is west. Elevation 1,000—3,000 feet.

Soil.—Same as Block I.

Crop.—Same composition as all the other blocks. The upper and eastern portion is rather open in places and signs of former cultivation appear, the trees being for the most part small in these localities.

Roads—1. From Bamunkund to the Burabalung and up the Burabalang river along the western boundary of the block, 10 miles, at Rs. 200 per mile=Rs. 2,000.

2. Eastwards from the Burabalung up the valley which forms the block. Length 5 miles, at Rs. 200 per mile=Rs. 1,000.

Tolal for Block V=Rs. 3,000.

Block VI.

	Well stocked.	Poorly stocked.	Total.
Area	3·20	·30	3·50 sq. miles.
	2,048·00	192·00	2,240 acres.

Boundaries—

North.—The south boundary of Block V.

South.—The Kusumboni hill ridge running eastwards from the Burabalung river.

East.—The west boundary of Block I.

West.—The Burabalung river.

Situation, configuration and aspect.—Like Block V, consists of the valley of a tributary of the Burabalung, viz., of the next one above it on the eastern side. General aspect west. Elevation 1,000—3,000 feet.

Soil and crop.—As in Block V, the eastern portion having the same characteristics as the corresponding portion of Block V.

Roads—1. Continue road 1 of Block V up the Burabalung along the western boundary of the block, two miles, at Rs. 200 per mile=Rs. 400.

2. Eastwards from the Burabalung up the valley which forms the block, five miles, at Rs. 200 per mile=Rs. 1,000.

Block VII.

	Well stocked.	Poorly stocked.	Total.
Area	4·50	·56	5·06 sq. miles.
	2,880·00	358·40	3,238 acres.

Boundaries—

North.—The south boundary of Block VI.

South.—Ridge running eastwards from the Burabalung river and forming the left-hand side of the valley of the head waters of the Podpoda river.

East.—The western boundary of Block II, and from the southern extremity of this up to top of ridge forming the southern boundary of this block in a south-western direction.

West.—The Burabalung river.

Situation, configuration and aspect.—This block contains the head waters of the Podpoda river; generally speaking the slopes are much more gentle than in the other blocks. General aspect is east. Elevation 2,000–3,000 feet.

Soil and crop.—Same as the other blocks. Forest open and light in places as in Blocks II, V and VI.

Roads—1. From source of Podpoda river down it to meet the main road from Baripada as shown in the map.
Length 5 miles, at Rs. 200 per mile=Rs. 1,000.
Total for Block VII=1,000.

Block VIII.

	Well stocked.	Poorly stocked.	Total.
Area	4·25	·40	4·65 sq. miles.
	2,720·00	256·00	2,976 acres.

Boundaries—

North.—A ridge running due east from the Burabalung river (the ridge which forms the south boundary of Block VII), also a part of the south boundary of Block IV.

East and South.—A tributary of the Burabalung river as shown in the map.

West.—Burabalung river.

Situation, configuration and aspect.—This block forms the right-hand side of a tributary of the Burabalung river. This tributary is the next important one on the right-hand side of the Burabalung river valley above the tributary whose valley forms Block VI. General aspect is south. Elevation 2,000—3,000 feet.

Soil and crop.—As in other blocks, resembles Blocks V, VI, and VII, in that the forest is rather light and open in parts of the eastern portion.

Roads.—1. Continue road 1 of Blocks V and VI up the Burabalung river. Length 5 miles at Rs. 200 per mile=Rs. 1,000.

2. From Burabalung eastwards along the south boundary of the block. Length 5 miles, at 200 per mile=Rs. 1,000.

3. The main road from Baripada to Simlipal will probably pass through the eastern portion of this block.

Total for Block VIII=Rs. 2,000.

Block IX.

	Well stocked.	Poorly stocked.	Total.
Area	6·00	·79	6·79 sq. miles.
	3,840 00	505·60	4,346 acres.

Boundaries—

North—Part of the south boundary of Blocks IV and VIII.

South—The ridge south of Gangaibodi as shown in the map.

East.—Take a line southwards from the place where the south boundary of Blocks III and IV meet, and following the stream as shown in the map, run it up to the ridge forming the south boundary.

West.—A stream about a mile west of Gangaibodi.

Situation, configuration and aspect.—This block is situated south of Block IV; it forms part of the valley of the tributary of the Burabalung river which forms the south boundary of Block VIII. For the most part the slopes are comparatively gentle. Elevation 2,000—3,000 feet.

Crop and soil.—Same as other blocks, the forest in the western portion is open and thin in places as noticed in portions of Blocks V, VI, VII and VIII.

Roads.—1. From the main road from Baripada to Simlipal take a road along the stream eastwards through the centre of the block.

Length 6 miles, at Rs. 200 per mile=Rs. 1,200.

Total for Block IX=Rs. 1,200.

Block X.

	Well stocked.	Poorly stocked.	Total.
Area	4·57	·40	4·97 sq. miles.
	2,924·80	256·00	3,181 acres.

Boundaries—

North.—The south boundary of Block VIII.

South.—Jinginiaposi ridge.

East.—West boundary of Block IX.

West.—The Burabalung river.

Situation, configuration and aspect.—Situated immediately south of Block VIII, includes the left-hand side of the valley of the tributary of the Burabalung which forms the northern boundary of this block, and also the valley of another tributary of the Burabalung situated higher up on the same side. General aspect is west. Elevation 2,000—3,000 feet.

Soil and crop—As in other blocks.

Roads—1. Continue road 1 of Block VIII up the Burabalung river. Length 5 miles, at Rs. 200 per mile=Rs. 1,000.

2. The main road from Baripada to Simlipal will skirt the eastern boundary of the block.

Total for Block X=Rs. 1,000.

Western Working Circle.

Block I.

	Well stocked.	Poorly stocked.	Total.
Area	2·50	·50	3·00 sq. miles.
	1,600·00	320·00	1,920·00 acres.

Boundaries—

North.—A line should be taken parallel to the Koiro river from a point* on the Utras stream by the village of Utras as nearly as possible along the existing boundaries of the forest and the village clearings of Oolkooda and Kaliani to within a short distance of the Kumadabodi stream.

West.—From this last point parallel to the Kumadabodi stream past the village of Kumadabodi to the low ridge due south of it, to a point marked by a cairn, the line will run as nearly as possible between the forest and the existing clearings of the villages of Jilbari and Kumadabodi.

East and South.—The Utras nadi from the point where it enters the Koiro nadi up it to top of ridge as shown in the map, then south-westwards along top of ridge to the north-east corner of Block II.

Note.—A point on the Koniabura nadi by Oolkooda village is marked by a cairn near an asun tree of 4′ 10″ girth marked thus V, being another point on the north boundary of the block.

* Marked by a cairn of stones and a sâl tree girth 5′ 5″ marked thus V.

Situation, configuration and aspect.—The upper slopes of the western aspect forming the right-hand side of the Kumadabodi north valley are in places very steep and precipitous; the lower are more gentle. The northern aspect forming part of the Koiro river valley is less steep than the western. Elevation between 500 and 1,500 feet.

Soil.—Reddish sandy clay formed by the decomposition of the volcanic rocks of which the hills are formed; much laterite and calcareous nodules in places, the latter at the foot of the slopes which are strewn with angular fragments of volcanic rocks.

Crop.—Sâl forest of all ages, in places rather mixed with other species. Sâl trees occur over 7′ and 8′ girth, but trees of these dimensions are rather scattered and will take a lot of finding when the time comes to mark them for cutting. Amongst the other species I noticed asun, dhau and char, a little bamboo occurs in places, and the undergrowth contains a deal of *Phoenix acaulis*, denoting the dryness of the locality.

Treatment.—Selection felling The following kinds of trees will be felled: green sâl trees over 7′ girth, crooked and unpromising sâl trees and other trees of all descriptions.

This treatment to be applied to all the Blocks I to X in both Working Circles. Dead standing trees in the adjacent clearings also to be sold.

Roads.—For the exploitation of this block the following roads are required:—

1. Along north boundary to Utras village, 3 miles, at Rs. 100 per mile = Rs. 300.
2. Along west boundary to Utras village, 3 miles, at Rs. 100 per mile = Rs. 300.
3. A connection with Daspur either from Kumadabodi or from the north-western corner of the block, about 6 or 7 miles, at Rs. 100 per mile.

Total for Block I, Rs. 1,200—1,300.

Block II.

	Well stocked.	Poorly stocked.	Total.
Area	3·33	·4	3·73 sq. miles.
	2,131·20	256·0	2,387 acres.

Boundaries-

North.—The ridge just south of the village of Kumadabodi.

South.—The ridge running from Charobandar hill to the tributary of the Buda river running at its base.

East.—The main Charobandar ridge running north-eastwards.

West.—The most western of the two tributaries of the Buda nadi.

Note.—A point on the proposed south boundary of Block II as marked by a cairn and a sâl tree, girth 6′ 3″, marked thus V; it lies south of the village of Kolaitooma, the podhan of which place knows the spot.

Situation, configuration and aspect.—Lies between 500 and 3,000 feet, forms the valley of one of the tributaries of the Buda nadi. General aspect west. The upper slopes, especially at Charobandar hill, are precipitous, the lower ones are gentle.

Soil.—Identical with that of Block I.

Crop.—The same kind of sâl forest as noticed in Block I. The lower slopes and the land between the two rivers is rather honeycombed, and the latter area has been pretty well skinned. I have included it in the block to prevent the soil being washed away, which would happen if completely cleared. At time of demarcation the people inside might be persuaded to move out and take up land outside the boundary.

Roads.—1. Continue the road along the west boundary of Block I southwards over the ridge by Kantikna and along the eastern tributary of the Buda nadi. Length about 4 miles, cost approximately Rs. 400.

Total for Block II, Rs. 400.

Block III.

	Well stocked.	Poorly stocked.	Total.
Area	3·01	·3	3·31 sq. miles.
	1,926·40	192·0	2,118 acres.

Boundaries—

North —South boundary of Block II.

South.—Ridge forming the left-hand side of the Buda nadi valley.

East and North.—Ridge running southwards from Charobandar hill to point where it meets the ridge which forms the south boundary.

West.—The Buda nadi and its tributaries as shown in the map.

Note.—A point is marked on the west boundary on a small side stream of the Buda nadi, up which the line is to run, about ½ mile east of Kondiadar village near where this side stream enters the main stream.
Marked by a cairn and a sâl tree 6′ 8″ girth marked thus V. The villagers of Kondiadar know the spot.

Situation, configuration and aspect.—Block III forms the valley of the head waters of the Buda nadi. Elevation from 500 to 3,000 feet. Aspect west and north. No very striking difference between the two as far as I could see during my rapid examination of the block; upper slopes often precipitous as in Block II.

Soil.—Not much laterite except on the lower ground towards the west: soil yellowish and darkish. Much quartz about. Slopes very rocky and stony.

Crop.—Honeycombed towards the west near Kondiadar village, large trees occur all over the block, a good many creepers in all places. Same kind of forest as described under Block I.

Roads.—1. Block II road to be continued southwards to Kondiadar village, two miles, at Rs. 100 per mile.

2. Along bank of river up to its source in an easterly direction and then turning north with the river.
Five miles, at Rs. 200 per mile = Rs. 1,000. As the soil is rather rocky in places, it will be more expensive than the other roads.
Total for Block III, Rs. 1,200.

Block IV.

	Well stocked	Poorly stocked.	Total.
Area	3·96	1·32	5·28 sq. miles.
	2,534·40	844·80	3,379·00 acres.

Boundaries—

North and West.—The Buda nadi.

South.—A line should be taken from the Buda nadi westwards along the existing boundaries of the forest and the cultivation of the village of Atibari to the Budachat nadi; it will run approximately as indicated in the map.

East.—The Budhachat nadi; to the top of Ganpati ridge to the south-east corner of Block III, and then along western boundary of Block III.

Note.—The point on the Budachat nadi is marked by a jam tree of 4′ 5″ girth marked thus V; it is situated about half mil west of Atibari village. The Atibari people know the place.

Situation, configuration and aspect.—Consists of the Ganpati hill with the various ridges running out from it. The ground at the base of the hill is much cut up by streams, owing to the partial removal of the forest. Aspects are north, east and south. Elevation 500—2,100 feet.

Soil.—A sandy clay; at the base of the hills is laterite with patches of calcareous nodules; upper slopes very rocky in places.

Crop.—A good deal honeycombed in the lower portions near the river, most of the best trees having been removed from these portions; in places very fine trees occur. The same kind of forest as before, viz. sâl, in places very much mixed with other species—asun, dhau, kusumb, jam, &c.

Roads.—1. From Kondiadar village round base of Ganpati hill to Atibari village, and from thence westwards to the Budachat nadi, 7 miles, at Rs. 100 per mile= Rs. 700.

2. From road I up the Budachat nadi valley, 3 miles, at Rs. 100 per mile= Rs. 300.
Total Block IV, Rs. 1,000.

Block V.

	Well stocked.	Poorly stocked.	Total.
Area	2·63	·2	2·83 sq. miles.
	1,683·20	128·0	1,811 acres.

Boundaries—

North.—The Ganpati hill ridge from the south-east corner of Block III to the head of the tributary of the Daia nadi which lies immediately west of Kendichua village, being part of the south boundary of Block III.

South.—The Daia nadi.
East.—The tributary of the Daia nadi immediately west of Kondichua village.
West.—The Budachat nadi.

Note.—A point on the east boundary of the block is marked by a cairn and sâl tree 5′ 11″ girth, marked thus V ; it lies about ½ mile due west of Kondichua village on this tributary of the Daia nadi.

Situation, configuration and aspect.—Consists of two spurs running southwards from the Ganpati main ridge and forms part of the right-hand side of the valley of the Daia nadi. Elevation about 1,000—3,000 feet. General aspects south, east and west. Parts of upper slopes rocky and precipitous.

Soil.—As in Block III.

Crop.—Honeycombed in southern part on the banks of the Daia nadi where many beautiful trees have been ringed. Sâl forest of same composition as noted in the previous blocks.

Roads.—1. Continue road 1 of Block IV eastwards along bank of Daia nadi to the western boundary of the block, 3 miles, at Rs. 100 per mile=Rs. 300.
2. From road 1 northwards up valley of tributary of Daia nadi immediately west of the village of Barakumra, 3 miles, at Rs. 100 per mile=Rs. 300.
3. From road 1 northwards up eastern boundary of the block, 3 miles, at Rs. 100 per mile=Rs. 300.

Total for Block V, Rs. 900.

Block VI.

	Well stocked.	Poorly stocked.	Total.
Area	2·59 sq. miles.	·4	2·99 sq. miles.
	1,657·60 acres.	256·0	1,914·00 acres.

Boundaries—

North.—The same ridge which forms the north boundary of Block V, running eastwards to head waters of tributary of the Kulodoro nadi as shown in map.
South.—The Daia nadi.
East.—The Kulodoro nadi and its tributary as shown in map.
West.—The eastern boundary of Block V.

Note.—A point at the junction of the Kulodoro nadi with the Daia nadi is marked by a cairn and a sâl tree of 10′ 5″ girth marked thus V ; this point marks the south-west corner of Block VI, the north-east corner of Block VIII, and a point on the west boundary of Block VII.

Situation, configuration and aspect.—A curved ridge running southwards, the long Ganpati hill ridge forming part of the right-hand side of the valleys of the Daia nadi and its tributary the Kulodoro nadi. Aspect east, south and west. Elevation 1,000 to 3,000 feet. Upper slopes rather precipitous in places; lower slopes near the Daia nadi often cut up by streams owing to the partial removal of the forest.

Soil.—Does not differ markedly from that noticed as occurring in Blocks III and IV.

Crop.—Honeycombed along banks of the Daia and Kulodoro nadis in the southern and eastern portions of the block. Identically of the same composition as has been noticed in the other blocks.

Roads.—1. Continue road 1 of Block V along bottom of Daia nadi and Kulodoro nadi valleys for a distance of about 5 miles, at Rs. 100 per mile=Rs. 500.

Total for Block VI, Rs. 500.

Block VII.

	Well stocked.	Poorly stocked.	Total.
Area	2·34 sq. miles.	·2	2·54 sq. miles.
	1,497·60 acres.	128·0	1,626 acres.

Boundaries—

North.—The Ganpati main ridge, which also forms the north boundary of Blocks V and VI.
South.—Ridge forming part of the left side of the valley of the Daia nadi, due south of the point where the Kulodoro nadi meets the Daia nadi.
East.—From the point where the Dudiani nadi meets the Daia nadi up the ridge, and along top of the ridge forming the left-hand side of the Kulodoro nadi valley in a north and slightly easterly direction to the Kulodoro nadi as in map, then up a tributary to the ridge which forms the northern boundary.

West.—The eastern boundary of Block VI as far as the Daia nadi, and from this point, where the Daia nadi and the Kulodoro nadi meet, in a south-westerly direction to top of the ridge mentioned as being the south boundary.

Situation, configuration and aspect.—Forms part of the left-hand valley of the Kulodoro nadi and for a short distance both sides of the Daia nadi valley, between the points where the Kulodoro and Dudiani nadis meet the Daia nadi. General aspect, west. Elevation between 1,000 and 3,000 feet. In northern part of the block precipitous slopes occur.

Soil.—Same as in Blocks III, V and VI.

Crop.— Ditto ditto.

Roads.—1. From the Kulodoro nadi to the Dudiani nadi along the Daia nadi valley, 1 mile, at Rs. 200 per mile = Rs. 200.

2. Continue road 1 of Block VI, another two miles along Kulodoro nadi, at Rs. 200 per mile = Rs. 400.

Total Block VII, 600.

Block VIII.

	Well stocked.	Poorly stocked.	Total.
Area ...	3·08	1·00	4·08 sq. miles.
	1,971·20	640·00	2,611 acres.

Boundaries—

North and West.—The Daia nadi as far as the Bejadia village up the ridge and then running in a south-easterly direction above Bejadia, *i.e.*, along part of the south boundary of Block VII, through the point noted below.

South.—From a point on the Daia nadi opposite Mirginondi village, where a small tributary from Ardanda hill enters the Daia nadi, in an east slightly south-east direction up to the top of Ardanda hill, and thence along the watershed between the Daia nadi on the north and the Kundia nadi on the south, until it meets the latter as shown in the map; the boundary then runs along the Kundia nadi and one of its tributaries to the top of the ridge forming the east boundary of the block (see map).

East.—The ridge above the villages of Bejadia and Singtola running southwards from the Daia nadi.

Note.—The point on the Daia nadi by Mirginondi village is marked by a cairn on the river bank in a small piece of cultivation, also a point in the Bejadia clearing marked by a cairn near a ponoso tree of 3′ 11″ girth with two stems, marked thus, V, near Rugoo Kolo's house.

Situation, configuration and aspect.—The block consists of the northern aspects of Ardanda hill and forms the left-hand side of the Daia nadi valley from the village of Mirginondi to the village of Bejadia. General aspect, north. Elevation between about 500 and 2,144 feet.

Soil.—A reddish-brown loam above; below, laterite with calcareous nodules. A massive laterite, containing much iron, occurs in the hill above Singtola village.

Crop.—In the lower elevations much cut up and honey combed by cultivation; the removal of the forest in some parts, notably near Bejadia and Singtola villages, has resulted in the ground being very much cut up by perpendicularly-sided nalas, and the forest in these parts is often not much better than a scrub; in other parts, however, the forest is very dense, containing large sâl trees of exploitable size, and also a very good undergrowth of sâl poles.

Roads.—1. From Mirginondi eastwards round the north of Ardanda hill to Bejadia, 5 miles, at Rs. 100 per mile = Rs. 500.

2. From Bejadia to the Kundia nadi, 3 miles, at Rs. 100 per mile = Rs. 300.

Total for Block VIII, Rs. 800.

Block IX.

	Well stocked.	Poorly stocked.	Total.
Area ...	3·68	1·00	4·68 sq. miles.
	2,355·20	640·00	2,995 acres.

Boundaries—

North and East.—The south boundary of Block VIII.

South.—The Kundia nadi.

West.—From a point on the Kundia nadi about quarter of a mile east of Kuspoda in a northerly direction to the Daia nadi, as indicated approximately in the map.

Note.—The point on the Kundia nadi by Kuspoda is marked by a cairn by a sâl tree of 10′ 1″ girth; there is also a bur l at this point across the stream.

Situation, configuration and aspect.—The block consists of the southern aspects of the Ardanda hill group, and forms the right-hand side of the valley of the Kundia nadi. Aspect south. Elevation 500—2,144 feet. The lower slopes are much cut up by streams in places, *e.g.*, just above Melodi village.

Soil.—Laterite with calcareous nodules in the lower parts; higher up we get a reddish-brown loam, the surface of the ground being covered with angular fragments of gneissose rocks.

Crop.—Same as in Block VIII. Scrubby above Melodi village and much honey-combed in the lower slopes towards the river, where, however, some very fine patches still remain.

Roads.—1. From Mirginondi eastwards round the south slopes of Ardanda hill, to meet road 2 of Block VIII, 6 miles, at Rs 100 per mile = Rs. 600.
Total for Block IX = Rs. 600.

Block X.

	Well stocked.	Poorly stocked.	Total.
Area	3·04	1·00	4·04 sq. miles.
	1,945·60	640·00	2.586 acres.

Boundaries—

North.—The Kundia jhora.

South.—The ridge which runs parallel to the Kundia jhora and south of it.

East.—The ridge running southwards from the Daia nadi, the northern portion of which forms the eastern boundary of Block VIII until it meets the ridge forming the southern boundary.

West.—The tributary of the Kundia nadi which rises at the western end of the ridge forming the southern boundary.

Situation, configuration and aspect.—Forms the left-hand side of the valley of the Kundia nadi, and contains its head waters. Main aspects are west and north. Elevation 1,000—3,000 feet.

Soil and Crop.—Same as noticed in Blocks VIII and IX.

Roads.—1. Continue road 2 of Block VIII southwards for about 3 miles, at Rs. 200 per mile = Rs. 600.
Total for Block X = Rs. 600.

Summary.

	Sq. miles.		Acres.
Area of Eastern Working Circle	51·41	=	32,902·40
Area of Western ditto	36·48	=	23,347·20
Total area under the Working Plan ...	87·89	=	56,249·60

Road construction for exploitation:—

		Rs.
Eastern Working Circle—		
70 miles at a cost of ...	...	14,000
20 ,, (repairs) at ..	...	1,000
Western Working Circle—67 ,, at a cost of ...	...	7,800
Total 137 miles ...	...	22,800

(These, which are feeder roads, will be constructed by the Forest Officer, and are quite distinct from the six main roads mentioned in Part II, paragraphs 92-96, which will be constructed by the State Engineer.)

APPENDIX V.

MEASUREMENTS TAKEN TO DETERMINE THE EXPLOITABLE LIMIT OF THE SÂL (SHOREA ROBUSTA).

List of Sound Trees.

(Size of tree, 6'—7' (girth at 4' above the ground).

Actual girth of the individual trees measured.

Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.
6	0	6	6	6	8	6	0	6	10	6	1	6	7	6	2
6	4	6	6	6	5	6	4	6	2	6	6	6	10	6	1
6	1	6	5	6	8	6	3	6	9	6	1	6	8	6	2
6	0	6	10	6	0	6	0	6	2	6	4	6	9	6	4
6	8	6	8	6	10	6	1	6	1	6	1	6	5	6	0
6	3	6	6	6	6	6	2	6	7	6	6	6	11	6	0
6	6	6	1	6	3	6	6	6	2	6	10	6	6	6	3
6	5	6	10	6	1	6	0	6	8	6	2	6	4	6	7
6	8	6	1	6	2	6	6	6	0	6	10	6	6	6	6
6	5	6	6	6	3	6	7	6	9	6	6	6	3	6	2
6	6	6	6	6	4	6	2	6	4	6	5	6	1	6	7
6	2	6	11	6	4	6	5	6	1	6	8	6	0	6	8
6	2	6	4	6	5	6	9	6	8	6	1	6	1	6	4
6	3	6	9	6	3	6	4	6	7	6	3	6	6	6	11
6	7	6	10	6	8	6	10	6	3	6	4	6	0	6	10
6	7	6	1	6	0	6	8	6	6	6	10	6	6	6	6
6	7	6	0	6	2	6	0	6	11	6	1	6	1	6	11
6	10	6	6	6	6	6	6	6	6	6	3	6	4	6	6
6	0	6	1	6	8	6	2	6	10	6	1	6	8	6	1
6	7	6	10	6	0	6	3	6	0	6	11	6	6	6	8
6	6	6	11	6	1	6	2	6	0	6	6	6	11	6	5
6	7	6	6	6	0	6	0	6	10	6	11	6	4	6	10
6	1	6	1	6	1	6	0	6	9	6	4	6	6	6	2
6	6	6	7	6	9	6	0	6	10	6	8	6	10	6	7
6	7	6	8	6	0	6	5	6	3	6	0	6	11	6	4
6	6	6	11	6	2	6	3	6	2	6	1	6	4	6	0
6	8	6	8	6	0	6	11	6	1	6	2	6	3	6	9
6	4	6	1	6	2	6	3	6	1	6	3	6	6	6	2
6	5	6	4	6	9	6	10	6	1	6	7	6	6	6	2
6	8	6	11	6	0	6	10	6	11	6	1	6	2	6	1
6	6	6	1	6	1	6	0	6	2	6	5	6	0	6	5
6	1	6	0	6	2	6	2	6	10	6	7	6	6	6	2
6	7	6	0	6	0	6	10	6	6	6	2	6	3	6	3
6	3	6	7	6	2	6	10	6	1	6	10	6	4	6	5
6	9	6	10	6	6	6	10	6	1	6	3	6	5	6	11
6	10	6	4	6	7	6	10	6	11	6	2	6	4	6	9
6	2	6	5	6	6	6	7	6	10	6	1	6	10	6	1
6	9	6	3	6	11	6	1	6	4	6	1	6	4	6	11
6	10	6	4	6	11	6	0	6	10	6	11	6	1	6	5
6	8	6	5	6	3	6	1	6	11	6	8	6	0	6	7
6	8	6	6	6	0	6	8	6	10	6	10	6	4	6	5
6	8	6	1	6	6	6	9	6	0	6	0	6	0	6	3
6	6	6	4	6	7	6	3	6	10	6	10	6	1	6	4
6	9	6	9	6	0	6	10	6	8	6	5	6	0	6	0
6	4	6	9	6	2	6	0	6	7	6	2	6	2	6	3
6	5	6	0	6	4	6	10	6	10	6	7	6	7	6	8
6	8	6	3	6	4	6	6	6	5	6	6	6	0	6	3
6	9	6	10	6	6	6	8	6	4	6	5	6	7	6	9
6	4	6	6	6	0	6	10	6	6	6	4	6	6	6	1
6	3	6	10	6	8	6	10	6	11	6	5	6	0	6	5
6	8	6	10	6	4	6	3	6	0	6	4	6	1	6	7
6	1	6	1	6	0	6	11	6	2	6	0	6	1	6	9
6	8	6	8	6	6	6	6	6	10	6	3	6	0	6	8
6	6	6	5	6	2	6	5	6	2	6	9	6	0	6	5
6	11	6	10	6	0	6	8	6	0	6	10	6	0	6	6
6	2	6	2	6	0	6	7	6	7	6	10	6	3	6	9
6	1	6	1	6	6	6	10	6	5	6	6	6	11	6	2
6	6	6	0	6	0	6	4	6	1	6	4	6	1	6	3
6	4	6	7	6	9	6	0	6	5	6	6	6	9	6	0
6	10	6	11	6	0	6	6	6	11	6	4	6	2	6	6
6	6	6	0	6	2	6	10	6	6	6	2	6	4	6	6
6	7	6	7	6	0	6	4	6	11	6	11	6	6	6	10
6	6	6	1	6	2	6	0	6	10	6	8	6	8	6	11
6	3	6	8	6	10	6	4	6	11	6	10	6	4	6	10
6	1	6	7	6	9	6	0	6	10	6	11	6	6	6	11
6	3	6	2	6	8	6	0	6	1	6	1	6	8	6	11
6	1	6	9	6	9	6	1	6	1	6	1	6	6	6	4
6	3	6	1	6	10	6	1	6	7	6	7	6	11	6	10
6	1	6	0	6	10	6	2	6	4	6	11	6	0	6	8
6	6	6	9	6	9	6	4	6	1	6	3	6	11	6	3
6	6	6	4	6	1	6	1	6	2	6	8	6	11	6	10
6	1	6	1	6	1	6	6	6	3	6	2	6	1	6	3
6	0	6	6	6	6	6	10	6	1	6	2	6	3	6	0
6	2	6	3	8	9	6	4	6	4	6	10	6	2	6	7
6	5	6	8	6	2	6	3	6	10	6	0	6	5	6	4
6	8	6	0	6	8	6	0	6	10	6	0	6	6	6	10
6	1	6	2	6	8	6	8	6	0	6	1	6	4	6	2
6	3	6	0	6	6	6	6	6	2	6	2	6	10	6	2
6	1	6	9	6	2	6	6	6	6	6	11	6	6	6	0
6	0	6	1	6	0	6	0	6	8	6	1	6	2	6	4
6	7	6	7	6	1	6	8	6	6	6	1	6	1	6	10
6	4	6	2	6	2	6	6	6	0	6	4	6	4	6	5
6	1	6	1	6	8	6	0	6	4	6	4	6	10	6	1
6	5	6	0	6	1	6	6	6	5	6	0	6	3	6	4
6	9	6	2	6	8	6	2	6	4	6	0	6	6	6	6
6	0	6	6	6	1	6	1	6	6	6	11	6	4	6	8
6	1	6	6	6	1	6	9	6	4	6	8	6	4	6	10
6	1	6	3	6	8	6	4	6	4	6	10	6	3	6	7
6	8	6	1	6	2	6	6	6	5	6	6	6	0	6	4
6	0	6	2	6	0	6	1	6	6	6	3	6	3	6	7
6	4	6	3	6	0	6	11	6	3	6	0	6	3	6	1
6	8	6	6	6	10	6	1	6	10	6	11	6	2	6	6
6	10	6	11	6	4	6	2	6	6	6	6	6	3	6	6
6	9	6	2	6	0	6	0	6	6	6	11	6	2	6	10
6	0	6	10	6	4	6	2	6	7	6	7	6	2	6	10

Size of tree, 6′—7′ (girth at 4′ above the ground).—*contd.*

Actual girth of the individual trees measured.

Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.
6	0	6	0	6	11	6	3	6	1	6	0	6	5	6	1
6	0	6	11	6	11	6	1	6	10	6	4	6	1	6	11
6	6	6	4	6	10	6	0	6	5	6	3	6	11	6	2
6	2	6	11	6	10	6	8	6	0	6	4	6	3	6	6
6	1	6	0	6	9	6	8	6	6	6	0	6	9	6	5
6	6	6	1	6	11	6	4	6	8	6	6	6	2	6	2
6	3	1	10	6	1	6	4	6	4	6	9	6	7	6	2
6	10	6	0	6	11	6	5	6	3	6	1	6	6	6	3
6	1	6	0	6	6	6	9	6	1	6	7	6	9	6	9
6	3	6	6	6	6	6	10	6	4	6	6	6	9	6	6
6	6	6	4	6	1	6	3	6	9	6	9	6	2	6	6
6	2	6	4	6	4	6	4	6	7	6	4	6	1	6	10
6	9	6	4	6	10	6	9	6	7	6	5	6	9	6	3
6	5	6	8	6	6	6	9	6	8	6	6	6	4	6	6
6	6	6	2	6	5	6	5	6	9	6	9	6	2	6	6
6	0	6	10	6	0	6	5	6	4	6	3	6	9	6	1
6	8	6	6	6	11	6	11	6	1	6	3	6	7	6	7
6	6	6	2	6	3	6	8	6	4	6	2	6	3	6	6
6	1	6	8	6	8	6	8	6	1	6	2	6	9	6	1
6	3	6	0	6	11	6	10	6	11	6	8	6	2	6	0
6	1	6	6	6	2	6	5	6	7	6	9	6	8	6	1
6	1	6	2	6	3	6	10	6	3	6	3	6	1	6	6
6	3	6	6	6	6	6	5	6	2	6	7	6	11	6	4
6	8	6	4	6	6	6	6	6	9	6	2	6	4	6	8
6	5	6	0	6	8	6	10	6	7	6	0	6	6	6	6
6	8	6	3	6	7	6	0	6	7	6	5	6	2	6	0
6	6	6	6	6	2	6	3	6	9	6	6	6	9	6	4
6	0	6	9	6	1	6	4	6	6	6	7	6	7	6	10
6	0	6	0	6	0	6	10	6	6	6	3	6	6	6	6
6	2	6	0	6	11	6	4	6	8	6	2	6	4	6	6
6	5	6	11	6	4	6	9	6	4	6	6	6	2	6	10
6	3	6	0	6	11	6	3	6	3	6	7	6	9	6	8
6	4	6	0	6	10	6	11	6	4	6	7	6	1	6	1
6	1	6	2	6	10	6	0	6	9	6	3	6	4	6	4
6	10	6	3	6	4	6	4	6	3	6	2	6	8	6	3
6	10	6	2	6	8	6	9	6	8	6	6	6	3	6	8
6	3	6	9	6	3	6	3	6	1	6	4	6	1	6	4
6	9	6	3	6	7	6	4	6	9	6	2	6	9	6	2
6	3	6	10	6	6	6	9	6	2	6	1	6	6	6	7
6	5	6	11	6	10	6	4	6	0	6	2	6	9	6	8
6	11	6	6	6	10	6	8	6	0	6	1	6	2	6	2
6	7	6	6	6	8	6	10	6	0	6	4	6	2	6	9
6	8	6	8	6	11	6	6	6	1	6	3	6	2	6	8
6	11	6	6	6	1	6	10	6	10	6	2	6	2	6	7
6	11	6	8	6	6	6	10	6	10	6	3	6	1	6	6
6	6	6	0	6	2	6	6	6	6	6	4	6	2	6	6
6	1	6	4	6	0	6	1	6	4	6	4	6	4	6	2
6	1	6	6	6	0	6	2	6	4	6	4	6	3	6	4
6	5	6	6	6	0	6	2	6	3	6	8	6	2	6	3
6	4	6	8	6	11	6	3	6	2	6	6	6	1	6	5
6	6	6	3	6	11	6	4	6	5	6	6	6	6	6	9
6	2	6	3	6	11	6	5	6	5	6	6	6	6	6	8
6	8	6	6	6	11	6	6	6	4	6	7	6	6	6	7
6	4	6	4	6	6	6	7	6	5	6	4	6	8	6	9
6	0	6	10	6	8	6	8	6	4	6	3	6	9	6	6
6	6	6	0	6	8	6	11	6	6	6	9	6	11	6	5
6	11	6	8	6	11	6	1	6	3	6	2	6	10	6	4
6	7	6	3	6	1	6	2	6	0	6	9	6	6	6	4
6	8	6	8	6	11	6	7	6	2	6	2	6	10	6	2
6	11	6	1	6	10	6	10	6	5	6	1	6	5	6	8
6	7	6	6	6	10	6	10	6	5	6	1	6	10	6	2
6	8	6	8	6	11	6	10	6	5	6	1	6	11	6	5
6	11	6	8	6	11	6	10	6	5	6	1	6	11	6	11
6	6	6	6	6	11	6	10	6	5	6	1	6	11	6	6
6	1	6	6	6	11	6	10	6	5	6	1	6	11	6	3
6	1	6	6	6	11	6	10	6	5	6	1	6	11	6	6
6	5	6	6	6	11	6	10	6	5	6	1	6	11	6	3
6	4	6	8	6	11	6	10	6	5	6	1	6	11	6	6
6	3	6	8	6	11	6	10	6	5	6	1	6	11	6	6
6	10	6	8	6	11	6	10	6	5	6	1	6	11	6	6
6	2	6	11	6	11	6	10	6	5	6	1	6	11	6	6
6	0	6	0	6	11	6	10	6	5	6	1	6	11	6	6
6	10	6	0	6	11	6	10	6	5	6	1	6	11	6	6
6	3	6	0	6	11	6	10	6	5	6	1	6	11	6	6
6	6	6	4	6	11	6	10	6	5	6	1	6	11	6	6
6	3	6	6	6	11	6	10	6	5	6	1	6	11	6	6
6	3	6	6	6	11	6	10	6	5	6	1	6	11	6	6
6	10	6	8	6	11	6	10	6	5	6	1	6	11	6	6
6	0	6	6	6	11	6	10	6	5	6	1	6	11	6	6
6	2	6	8	6	11	6	10	6	5	6	1	6	11	6	6
6	3	6	0	6	11	6	10	6	5	6	1	6	11	6	6
6	0	6	11	6	11	6	10	6	5	6	1	6	11	6	6
6	0	6	3	6	11	6	10	6	5	6	1	6	11	6	6
6	0	6	0	6	11	6	10	6	5	6	1	6	11	6	6
6	0	6	11	6	11	6	10	6	5	6	1	6	11	6	6
6	5	6	0	6	11	6	10	6	5	6	1	6	11	6	6
6	1	6	6	6	11	6	10	6	5	6	1	6	11	6	6
6	3	6	10	6	11	6	10	6	5	6	1	6	11	6	6
6	0	6	11	6	11	6	10	6	5	6	1	6	11	6	6
6	10	6	11	6	11	6	10	6	5	6	1	6	11	6	6
6	11	6	11	6	11	6	10	6	5	6	1	6	11	6	6
6	5	6	0	6	11	6	10	6	5	6	1	6	11	6	6
6	5	6	6	6	11	6	10	6	5	6	1	6	11	6	6
6	3	6	3	6	11	6	10	6	5	6	1	6	11	6	6
6	2	6	2	6	11	6	10	6	5	6	1	6	11	6	6
6	6	6	6	6	11	6	10	6	5	6	1	6	11	6	6
6	4	6	11	6	11	6	10	6	5	6	1	6	11	6	6
6	4	6	10	6	11	6	10	6	5	6	1	6	11	6	6
6	6	6	0	6	11	6	10	6	5	6	1	6	11	6	6
6	2	6	2	6	11	6	10	6	5	6	1	6	11	6	6
6	6	6	6	6	11	6	10	6	5	6	1	6	11	6	6
6	3	6	8	6	11	6	10	6	5	6	1	6	11	6	6
6	0	6	9	6	11	6	10	6	5	6	1	6	11	6	6
6	2	6	11	6	11	6	10	6	5	6	1	6	11	6	6
6	0	6	10	6	11	6	10	6	5	6	1	6	11	6	6
6	4	6	9	6	11	6	10	6	5	6	1	6	11	6	6

Size of tree, 6'—7' (girth at 4' above the ground).—*contd.*

Actual girth of the individual trees measured.

Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.
6	6	6	7	6	10	6	2	6	2	6	2	6	7	6	11
6	8	6	9	8	8	6	3	6	7	6	0	6	7	6	8
6	7	6	9	6	6	6	7	6	9	6	8	6	7	6	7
6	3	6	7	6	11	6	6	6	9	6	10	6	0	6	4
6	3	6	10	6	1	6	2	6	11	6	8	6	8	6	3
6	1	6	9	6	9	6	8	6	11	6	0	6	9	6	9
6	1	6	10	6	11	6	0	6	4	6	8	6	7	6	9
6	1	6	3	6	10	6	7	6	2	6	4	6	6	6	6
6	9	6	4	6	10	6	9	6	3	6	5	6	5	6	4
6	5	6	9	6	4	6	9	6	9	6	5	6	9		
6	2	6	8	6	7	6	4	6	3	6	7	6	4		

Total number of trees (6'—7') = 1,766.

Size of tree, 7'—8'.

Actual girth of individual trees measured.

Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.
7	6	7	6	7	1	7	6	7	7	7	7	7	1	7	8
7	0	7	0	7	2	7	7	7	1	7	3	7	3	7	6
7	2	7	0	7	4	7	4	7	7	7	8	7	4	7	4
7	1	7	4	7	10	7	8	7	2	7	1	7	1	7	3
7	0	7	0	7	2	7	5	7	6	7	2	7	9	7	8
7	10	7	4	7	0	7	10	7	1	7	0	7	7	7	1
7	8	7	6	7	11	7	1	7	1	7	8	7	3	7	10
7	6	7	0	7	4	7	8	7	3	7	3	7	7	7	0
7	2	7	1	7	11	7	4	7	3	7	4	7	1	7	1
7	6	7	9	7	5	7	0	7	0	7	0	7	6	7	9
7	4	7	6	7	2	7	6	7	9	7	6	7	4	7	5
7	0	7	7	7	6	7	8	7	8	7	7	7	2	7	3
7	0	7	1	7	5	7	0	7	6	7	9	7	3	7	2
7	0	7	6	7	0	7	5	7	8	7	3	7	1	7	9
7	3	7	0	7	1	7	0	7	8	7	4	7	5	7	1
7	1	7	0	7	4	7	2	7	0	7	9	7	3	7	7
7	0	7	10	7	4	7	0	7	6	7	11	7	6	7	6
7	2	7	4	7	0	7	5	7	3	7	8	7	11	7	2
7	2	7	4	7	1	7	4	7	9	7	1	7	7	7	9
7	4	7	5	7	6	7	11	7	10	7	3	7	4	7	3
7	10	7	3	7	4	7	0	7	10	7	4	7	0	7	6
7	0	7	4	7	6	7	0	7	10	7	8	7	4	7	0
7	0	7	10	7	4	7	1	7	10	7	10	7	7	7	0
7	0	7	0	7	6	7	4	7	6	7	3	7	7	7	2
7	9	7	2	7	8	7	2	7	6	7	4	7	0	7	7
7	8	7	10	7	4	7	1	7	3	7	6	7	1	7	2
7	2	7	4	7	2	7	5	7	3	7	9	7	8	7	4
7	0	7	10	7	6	7	11	7	9	7	2	7	2	7	6
7	4	7	4	7	4	7	1	7	2	7	11	7	4	7	7
7	4	7	6	7	3	7	11	7	1	7	4	7	5	7	7
7	1	7	4	7	5	7	1	7	5	7	6	7	8	7	9
7	10	7	8	7	3	7	6	7	7	7	10	7	0	7	6
7	6	7	0	7	0	7	3	7	7	7	0	7	3	7	0
7	8	7	6	7	2	7	4	7	0	7	1	7	10	7	0
7	10	7	1	7	2	7	6	7	9	7	8	7	1	7	1
7	1	7	7	7	4	7	6	7	0	7	0	7	0	7	0
7	2	7	5	7	1	7	8	7	4	7	3	7	4	7	3
7	0	7	8	7	10	7	8	7	2	7	8	7	9	7	1
7	11	7	12	7	10	7	1	7	7	7	0	7	11	7	4
7	1	7	4	7	4	7	0	7	0	7	3	7	0	7	6
7	4	7	3	7	6	7	2	7	6	7	0	7	0	7	2
7	6	7	8	7	0	7	5	7	2	7	10	7	4	7	7
7	0	7	0	7	2	7	0	7	3	7	10	7	1	7	6
7	0	7	1	7	0	7	3	7	10	7	7	7	4	7	7
7	2	7	6	7	1	7	2	7	7	7	2	7	6	7	2
7	11	7	10	7	6	7	0	7	10	7	3	7	4	7	3
7	1	7	2	7	5	7	8	7	1	7	0	7	10	7	9
7	10	7	0	7	0	7	3	7	5	7	3	7	9	7	8
7	1	7	1	7	10	7	0	7	3	7	0	7	4	7	4
7	7	7	8	7	4	7	0	7	6	7	2	7	3	7	9
7	8	7	1	7	4	7	7	7	5	7	4	7	10	7	1
7	10	7	10	7	8	7	9	7	0	7	8	7	8	7	2
7	9	7	11	7	6	7	4	7	9	7	1	7	5	7	1
7	2	7	2	7	2	7	7	7	9	7	0	7	6	7	3
7	4	7	4	7	11	7	4	7	4	7	5	7	10	7	6
7	4	7	11	7	2	7	2	7	6	7	5	7	4	7	4
7	0	7	0	7	5	7	1	7	5	7	10	7	4	7	8
7	2	7	1	7	6	7	6	7	2	7	3	7	3	7	9
7	1	7	10	7	3	7	7	7	7	7	1	7	1	7	3
7	6	7	11	7	0	7	2	7	7	7	8	7	6	7	1
7	2	7	9	7	6	7	9	7	4	7	1	7	0	7	2
7	6	7	2	7	4	7	3	7	7	7	4	7	4	7	7
7	0	7	4	7	4	7	8	7	1	7	0	7	2	7	4
7	8	7	3	7	0	7	4	7	2	7	0	7	8	7	3
7	9	7	7	7	1	7	7	7	5	7	1	7	4	7	5
7	4	7	6	7	4	7	7	7	10	7	7	7	2	7	2
7	0	7	1	7	5	7	1	7	6	7	6	7	6	7	9
7	10	7	0	7	6	7	7	7	8	7	2	7	11	7	9
7	3	7	11	7	3	7	1	7	6	7	11	7	3	7	11
7	1	7	1	7	1	7	0	7	2	7	4	7	8	7	9
7	4	7	8	7	0	7	11	7	4	7	6	7	4	7	8
7	1	7	0	7	8	7	7	7	3	7	5	7	0	7	4
7	1	7	1	7	10	7	8	7	2	7	2	7	0	7	6
7	0	7	0	7	9	7	0	7	2	7	0	7	4	7	7
7	0	7	8	7	5	7	2	7	5	7	4	7	6	7	6
7	0	7	0	7	3	7	6	7	5	7	7	7	10	7	10
7	11	7	3	7	1	7	11	7	6	7	6	7	0	7	4
7	4	7	0	7	0	7	7	7	7	7	9	7	0	7	4
7	4	7	6	7	4	7	0	7	0	7	2	7	0	7	3
7	0	7	6	7	8	7	2	7	0	7	10	7	6	7	11
7	7	7	6	7	0	7	6	7	11	7	8	7	1	7	8
7	10	7	7	7	0	7	9	7	0	7	2	7	0	7	8
7	8	7	3	7	3	7	8	7	8	7	8	7	2	7	6
7	0	7	1	7	11	7	6	7	8	7	3	7	2	7	9
7	7	7	4	7	6	7	7	7	3	7	0	7	0	7	0
7	1	7	10	7	7	7	2	7	0			7	8		

Size of tree, 7′—8′—*continued.*

Actual girth of individual trees measured.

Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.
7	2	7	2	7	6	7	2	7	1	7	0	7	9	7	3
7	3	7	0	7	1	7	4	7	0	7	8	7	0	7	4
7	2	7	0	7	2	7	0	7	8	7	10	7	7	7	4
7	6	7	8	7	1	7	1	7	8	7	0	7	1	7	8
7	5	7	0	7	0	7	3	7	3	7	1	7	2	7	7
7	7	7	3	7	9	7	11	7	7	7	6	7	3	7	8
7	6	7	8	7	3	7	6	7	6	7	1	7	4	7	6
7	0	7	4	7	6	7	6	7	3	7	3	7	1	7	4
7	4	7	10	7	11	7	2	7	6	7	9	7	1	7	9
7	10	7	11	7	0	7	11	7	0	7	4	7	4	7	2
7	2	7	0	7	0	7	4	7	4	7	6	7	8	7	3
7	1	7	4	7	0	7	5	7	7	7	7	7	9	7	9
7	4	7	6	7	6	7	4	7	10	7	2	7	6	7	4
7	6	7	11	7	7	7	0	7	10	7	9	7	4	7	0
7	9	7	0	7	6	7	0	7	0	7	4	7	4	7	0
7	3	7	10	7	1	7	9	7	10	7	6	7	7	7	2
7	8	7	1	7	0	7	4	7	0	7	4	7	7	7	9
7	2	7	0	7	2	7	2	7	9	7	8	7	7	7	11
7	4	7	0	7	2	7	1	7	3	7	5	7	6	7	3
7	9	7	4	7	2	7	3	7	7	7	4	7	3	7	4
7	6	7	2	7	7	7	6	7	7	7	7	7	9	7	6
7	3	7	4	7	6	7	9	7	1	7	11	7	9	7	2
7	2	7	8	7	1	7	1	7	4	7	2	7	2	7	11
7	3	7	0	7	3	7	11	7	1	7	0	7	8	7	11
7	9	7	3	7	6	7	1	7	8	7	6	7	8	7	11
7	6	7	7	7	8	7	0	7	7	7	4	7	11	7	9
7	2	7	9	7	1	7	5	7	8	7	2	7	3	7	9
7	4	7	11	7	10	7	3	7	4	7	2	7	0	7	5
7	8	7	4	7	5	7	1	7	3	7	8	7	8	7	5
7	11	7	3	7	2	7	5	7	7	7	8	7	9	7	9
7	3	7	1	7	9	7	7	7	11	7	1	7	8	7	1
7	3	7	10	7	3	7	4	7	2	7	2	7	9	7	6
7	4	7	0	7	6	7	1	7	0	7	6	7	0	7	5
7	1	7	5	7	10	7	6	7	4	7	3	7	4	7	4
7	6	7	0	7	1	7	0	7	7	7	2	7	8	7	9
7	8	7	5	7	2	7	5	7	3	7	11	7	4	7	11
7	7	7	6	7	0	7	7	7	10	7	5	7	4	7	6
7	3	7	0	7	1	7	8	7	2	7	9	7	0	7	5
7	0	7	3	7	11	7	7	7	1	7	0	7	8	7	6
7	5	7	7	7	6	7	0	7	4	7	10	7	8	7	7
7	9	7	6	7	11	7	2	7	2	7	8	7	1	7	9
7	10	7	10	7	8	7	4	7	9	7	2	7	8		

Total number of trees (7′—8′)=1,030.

Size of tree, 8′—9′.

Actual girth of individual trees measured.

Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.
8	6	8	0	8	6	8	6	8	1	8	0	8	2	8	1
8	3	8	1	8	2	8	1	8	11	8	11	8	9	8	2
8	6	8	2	8	5	8	5	8	4	8	1	8	4	8	1
8	2	8	7	8	0	8	0	8	0	8	2	8	5	8	4
8	0	8	3	8	0	8	0	8	1	8	11	8	2	8	1
8	0	8	8	8	8	8	1	8	4	8	0	8	3	8	3
8	5	8	4	8	3	8	4	8	2	8	3	8	8	8	11
8	1	8	1	8	6	8	9	8	6	8	2	8	10	8	0
8	6	8	0	8	4	8	0	8	4	8	0	8	9	8	7
8	1	8	10	8	2	8	7	8	2	8	6	8	0	8	6
8	0	8	4	8	9	8	0	8	10	8	9	8	2	8	10
8	1	8	6	8	0	8	4	8	4	8	6	8	2	8	5
8	1	8	6	8	2	8	3	8	0	8	1	8	0	8	6
8	6	8	1	8	4	8	3	8	0	8	0	8	2	8	0
8	0	8	2	8	0	8	4	8	3	8	9	8	6	8	5
8	7	8	8	8	0	8	0	8	1	8	6	8	7	8	4
8	3	8	9	8	2	8	4	8	1	8	3	8	9	8	7
8	1	8	0	8	0	8	2	8	1	8	11	8	1	8	2
8	7	8	0	8	4	8	7	8	4	8	8	8	7	8	3
8	1	8	0	8	6	8	0	8	4	8	7	8	9	8	9
8	2	8	9	8	4	8	2	8	2	8	3	8	1	8	7
8	5	8	8	8	3	8	4	8	8	8	9	8	0	8	11
8	3	8	5	8	0	8	3	8	0	8	11	8	6	8	3
8	1	8	2	8	1	8	3	8	0	8	4	8	5	8	10
8	0	8	2	8	0	8	7	8	11	8	3	8	0	8	3
8	8	8	7	8	4	8	2	8	5	8	6	8	4	8	1
8	1	8	0	8	0	8	6	8	3	8	0	8	6	8	4
8	6	8	4	8	9	8	6	8	3	8	9	8	7	8	1
8	4	8	0	8	4	8	11	8	6	8	6	8	9	8	9
8	11	8	5	8	6	8	9	8	2	8	0	8	11	8	6
8	1	8	2	8	6	8	3	8	0	8	3	8	1	8	9
8	11	8	9	8	11	8	7	8	6	8	4	8	9	8	9
8	11	8	1	8	6	8	0	8	1	8	0	8	5	8	3
8	9	8	11	8	6	8	4	8	2	8	4	8	3		
8	0	8	3	8	9	8	11	8	10	8	10	8	7		
8	1	8	2	8	4	8	3	8	3	8	5	8	3		
8	3	8	1	8	0	8	0	8	6	8	1	8	2		
8	5	8	5	8	3	8	0	8	2	8	0	8	7		
8	0	8	7	8	2	8	4	8	9	8	2	8	2		

Total number of trees (8′—9′)=306.

Size of tree, 9′ and over.

Actual girth of individual trees measured.

Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.
9	2	10	0	9	8	9	6	9	7	10	7	10	1	9	2
9	8	11	7	9	4	9	3	9	0	9	4	10	0	9	6
9	0	9	7	10	1	9	1	9	0	9	3	10	7	9	0
9	1	10	0	9	2	9	6	9	0	9	2	9	5	10	4
9	6	9	10	10	0	9	4	9	4	9	1	9	0	9	2
9	0	9	3	10	1	10	10	9	0	9	1	9	9	9	11
9	0	10	2	10	0	9	4	9	2	10	6	9	2	10	9
9	0	10	8	9	10	12	0	10	1	9	1	9	5	9	9
10	0	9	0	10	8	11	2	9	6	9	4	9	10	9	3
9	6	9	6	9	2	10	0	9	0	10	2	9	2	9	10
9	1	9	8	10	0	9	1	9	0	10	5	9	4	9	11
9	11	9	4	9	0	11	11	9	7	9	3	9	5	9	2
9	2	9	9	9	0	9	3	11	6	9	4	9	9		
10	0	9	1	11	10	9	0	10	8	10	1	9	1		
10	0	9	3	10	0	9	0	9	6	9	4	9	7		

Total number of trees (9′ and over) = 117.

List of Unsound Trees.

Size of tree, 6′—7′.

Girth of tree.	Remarks.	Girth of tree.	Remarks.	Girth of tree.	Remarks.
Ft. in.		Ft. in.		Ft. in.	
6 6	Broken branch.	6 7	Burnt at base.	6 6	Forked.
6 8	Barked.	6 6	Broken branch.	6 5	,,
6 7		6 3	Burnt at base.	6 0	,,
6 8	Broken branch.	6 1	Forked.	6 4	,,
6 10		6 3	,,	6 11	Top broken off.
6 10		6 1	,,	6 10	Hollow.
6 8		6 9	Forked.	6 2	,,
6 8	Broken branch.	6 8	Burnt at base.	6 11	Forked.
6 11		6 9	Ditto.	6 9	,,
6 10		6 2	Forked.	6 6	Burnt at base.
6 2		6 9	Burnt at base.	6 4	Forked.
6 8		6 4	Broken branch.	6 10	Dry.
6 10		6 6	Ditto.	6 11	Forked.
6 7	Broken branch.	6 4	Forked.	6 10	,,
6 11	Forked.	6 3	Broken branch.	6 6	,,
6 11		6 0	Burnt at base.	6 10	Dry, burnt.
6 9		6 9	Forked.	6 11	Forked.
6 11	Broken branch.	6 1	Burnt at base.	6 8	Broken branch.
6 9	Forked.	6 11	Ditto.	6 4	Ditto.
6 1	Broken branch.	6 11	Forked.	6 6	Forked.
6 7		6 1	,,	6 10	,,
6 8		6 3	,,	6 10	Broken branch.
6 9	Barked at base	6 10	Dry.	6 0	Ditto.
6 0	Broken branch	6 0	Burnt at base.	6 11	Dry.
6 7	Forked.	6 7	Broken branch.	6 10	Forked.
6 0	,,	6 0	Ditto.	6 3	Gnarled.
6 8		6 3	Forked.	6 8	Hollow.
6 4	Top broken off.	6 4	,,	6 10	Forked.
6 2		6 7	Broken branch.	6 6	,,
6 3		6 6	Forked.	6 5	,,
6 7	Barked at base.	6 4	Hollow.	6 6	
6 4	Ditto.	6 0	Broken branch.	6 2	Broken branch.
6 8		6 1	Forked.	6 8	Ditto.
6 10	Barked at base.	6 10	Burnt at base.	6 10	Forked.
6 6	Forked.	6 0	Dry.	6 10	,,
6 10	,,	6 0	Broken branch.	6 6	,,
6 0	Barked at base.	6 6	Burnt at base.	6 0	Broken branch.
6 8	Ditto.	6 0	Forked.	6 10	Forked.
6 2	Dead.	6 6	Dry.	6 8	Burnt at base.
6 1	Forked.	6 4	Broken branch.	6 1	Broken branch.
6 9	,,	6 4	Burnt at base.	6 6	Rotten at top.
6 10	,,	6 9	Forked.	6 0	Forked.
6 6	,,	6 1	,,	6 0	Dry.
6 3	Dead.	6 6	Burnt at base.	6 11	Burnt at base.
6 4	Burnt at base.	6 10	Forked.	6 3	Ditto.
6 4	Ditto.	6 10	,,	6 2	Hollow.
6 8	Forked.	6 4	Broken branch.	6 4	Forked.
6 8	,,	6 2	Stag-headed.	6 0	,,
6 1	Broken branch.	6 11	Forked.	6 10	,,
6 11	Forked.	6 4	Dry.	6 8	,,
6 10	Forked.	6 3	,,	6 11	Broken branch.
6 10	Top broken off.	6 11	Burnt at base.	6 2	Forked.
6 11	Broken branch.	6 11	Forked.	6 2	,,
6 6	Ditto.	6 1	,,	6 3	Burnt at base.
6 0	Burnt at base.	6 3	,,	6 3	Ditto.
6 2	Top broken off.	6 11	,,	6 0	Broken branch.
6 10		6 4	Dry.	6 4	Top broken off.
6	Broken branch.	6 11	Forked.	6 0	Hollow.
6 8	Top broken off.	6 3	,,	6 9	Burnt at base.
6 11	Broken branch.	6 0	,,	6 3	Forked.
6 10	Ditto.	6 6	Burnt at base.	6 6	,,
6 10	Burnt at base.	6 3	Ditto.	6 6	Broken branch.
6 4	Crooked.	6 5	Stag-headed.	6 11	Struck by lightning.
6 11	Burnt at base.	6 8	Forked.	6 4	Forked.
6 7	Forked.	6 4	,,	6 11	Hollow.
6 0	Lightning struck.	6 5	Crooked.	6 11	Forked.
6 10	Broken branch.	6 9	,,	6 3	,,
6 4	Burnt at base.	6 10	Forked.	6 1	,,
6 5	Forked.	6 11	,,	6 9	Swollen at base.

Size of tree, 6′—7′.—*contd.*

Girth of tree.	Remarks.	Girth of tree.	Remarks.	Girth of tree.	Remarks.
Ft. in.		Ft. in.		Ft. in.	
6 11	Forked.	6 2	Top broken off.	6 2	Hollow.
6 10	,,	6 4	Broken branch.	6 9	Swollen at base.
6 6	Hollow.	6 11	Hollow.	6 5	Broken branch.
6 4	,,	6 0	Forked.	6 0	Hollow.
6 3	Forked.	6 7	Broken branch.	6 11	Broken branch.
6 5	Hollow.	6 0		6 5	Ditto.
6 1	Forked.	6 2	Barked at base.	6 2	Forked.
6 6	Top broken off.	6 6	Top broken off.	6 8	Struck by lightning.
6 11		6 2	Ditto.	6 4	Barked at base.
6 6		6 5	Swollen at base.	6 11	Broken branch.
6 4	Broken branch.	6 0	Forked.	6 9	Forked.
6 5	Ditto.	6 9	Hollow.	6 10	Barked at base.
6 5	Barked at base.	6 4	Barked at base.	6 3	Broken branch.
6 2	Hollow.	6 1	Top broken off.	6 11	Forked.
6 6	Broken branch.	6 4	Swollen at 40 feet.	6 7	Top broken off.
6 3	Barked at base.	6 3	Hollow.	6 10	Hollow.
6 1	Forked.	6 3	Top broken off.	6 3	Forked.
6 3	,,	6 2	Ditto.	6 7	Swollen at 40 feet.
6 11	,,	6 1	Swollen at base.	6 9	Twisted.
6 9	,,	6 9	Hollow.	6 8	Top broken off.
6 5	Hollow.	6 9	Dead.	6 4	Struck by lightning.
6 11	Forked.	6 8	,, forked.	6 2	Forked.
6 9	Barked at base.	6 8	Crooked.	6 11	Top broken off.
6 3	Top broken off.	6 0	Barked at base.	6 5	Hollow.
6 0	Burnt at base.	6 3	Hollow.	6 10	Forked.
6 6	Broken branch.	6 6	,, above.	6 6	,,
6 8	Hollow.	6 11	Dead.	6 2	,, at 30 feet.
6 10	Barked at base.	6 4	Crooked.	6 6	Swollen at base.
6 3	Ditto.	6 9	,,	6 7	Forked.
6 6	Hollow.	6 4	Hollow.	6 4	,,
6 11	Burnt at base.	6 5	Barked at base.	6 3	Barked at base.
6 10	Hollow.	6 5	Forked.	6 3	Broken branch.
6 10	,,	6 5	Hollow.		

Total number of trees (6′—7′) = 305.

Size of tree, 7′—8′.

Girth of tree.	Remarks.	Girth of tree.	Remarks.	Girth of tree.	Remarks.
Ft. in.		Ft. in.		Ft. in.	
7 8		7 6	Forked.	7 10	Barked.
7 0	Broken branch.	7 1	,,	7 6	Forked.
7 4		7 8	,,	7 5	Broken branch.
7 1	Barked.	7 1	,,	7 7	Forked.
7 4	Forked at 40 feet.	7 2	Barked at base.	7 8	,,
7 0	Ditto 30 ,,	7 0	Ditto.	7 4	,,
7 7		7 0	Top broken off.	7 8	,,
7 10	Forked at 30 feet.	7 0	Broken branch.	7 1	,,
7 10		7 4	Stag-headed.	7 4	,,
7 7	Barked at base.	7 3	Forked.	7 2	Burnt at base.
7 6	Dead.	7 7	Broken branch.	7 10	Forked.
7 8	Forked.	7 7	Barked at base.	7 6	,,
7 8		7 1	Broken branch.	7 4	,,
7 6		7 0	Barked at base.	7 8	,,
7 5		7 8	Broken branch.	7 0	Hollow.
7 0	Broken branch.	7 9	Forked.	7 4	Forked.
7 11	Forked.	7 11	,,	7 1	,,
7 5		7 11	Top broken off.	7 0	,,
7 4	Forked.	7 10		7 10	,,
7 10	,,	7 3	Forked.	7 9	,,
7 1	,,	7 2	Dry.	7 9	,,
7 6	,,	7 10	Broken branch.	7 3	,,
7 10	,,	7 8	Hollow.	7 0	,,
7 8	Dead and dry.	7 10	Broken branch.	7 1	Broken branch.
7 6	Broken branch.	7 3	Ditto.	7 5	Ditto.
7 9	Forked.	7 11	Ditto.	7 0	Forked.
7 0		7 7	Burnt at base.	7 3	,,
7 1		7 1	Broken branch.	7 1	
7 6	Forked.	7 10	Forked.	7 0	Forked.
7 0	Barked at base.	7 10	,,	7 3	,,
7 8	Dead.	7 2	Dry.	7 0	Broken branch.
7 0	Broken branch.	7 11	Burnt at base.	7 1	Forked.
7 1		7 1	Ditto.	7 3	,,
7 6	Barked.	7 6	Partly barked.	7 4	,,
7 8	Broken branch.	7 5	Forked.	7 8	Hollow.
7 11	Forked.	7 8	,,	7 0	Broken branch.
7 1	,,	7 2	,,	7 0	Forked.
7 1	Broken branch.	7 4	,,	7 0	Burnt at base.
7 10	Forked.	7 6	Burnt at base.	7 10	Broken branch.
7 0		7 6	Forked.	7 3	Forked.
7 8	Broken branch.	7 1	,,	7 2	,,
7 6		7 9	Burnt at base.	7 1	Burnt at base.
7 8	Cut at base.	7 4	Forked.	7 1	Broken branch.
7 4	Ditto.	7 0	,,	7 7	
7 6	Barked at base.	7 10	,,	7 8	Forked.
7 3	Broken branch.	7 6	,,	7 2	Burnt at base.
7 8		7 4	,,	7 0	Broken branch.
7 2	Cut at base.	7 1	,,	7 6	
7 2	Forked.	7 4	Broken branch	7 10	Forked.
7 7	,,	7 10	Forked.	7 2	,,
7 8	Barked at base.	7 3	,,	7 3	,,
7 4	Ditto.	7 1	,,	7 11	,,
7 1	Ditto.	7 11	Broken branch.	7 4	,,
7 0		7 4	Forked.	7 6	Hollow.
7 10		7 2	,,	7 4	Forked.
7 2	Broken branch.	7 8	Forked.	7 8	,,

Size of tree, 7'—8'—*contd.*

Girth of tree.	Remarks.	Girth of tree.	Remarks.	Girth of tree.	Remarks.
Ft. In.		Ft. In.		Ft. In.	
7 10		7 4	Broken branch.	7 9	Forked.
7 6	Forked.	7 3	Forked.	7 0	Forked at 40 feet.
7 7	,,	7 11	,,	7 8	Broken branch.
7 11	,,	7 2	Broken branch.	7 2	Forked.
7 10		7 3		7 3	,,
7 3	Forked.	7 0	Broken branch.	7 4	,,
7 4	,,	7 9	Ditto.	7 11	Barked at base.
7 3	,,	7 9	Forked.	7 9	Ditto.
7 0	Burnt at base.	7 2	,,	7 9	Forked.
7 10	Broken branch.	7 7	,,	7 4	,,
7 0	Ditto.	7 11	,,	7 7	Barked at base.
7 10	Hollow.	7 2		7 7	Ditto.
7 6	Broken branch.	7 7	Broken branch.	7 10	Broken branch.
7 3	Forked.	7 0	Ditto.	7 1	Barked at base.
7 0	Top broken off.	7 6	Ditto.	7 4	Swollen at base.
7 6	Hollow.	7 8	Forked.	7 4	Barked at base.
7 6	Forked.	7 1	Barked at base.	7 9	Forked.
7 11	Burnt at base.	7 9	Ditto.	7 4	,, at 40 feet.
7 0	Forked.	7 11	Forked.	7 6	Broken branch.
7 10	,,	7 9	Broken branch.	7 1	Top broken off.
7 6	,,	7 5	Forked.	7 9	Forked at 20 feet.
7 1	,,	7 3	Hollow.	7 0	,, 30 feet.
7 2	,,	7 5	Top broken off.	7 8	Hollow.
7 2	,,	7 6	Hollow.	7 3	Forked.
7 8	,,	7 1	barked at base.	7 8	,, at 50 feet.
7 0	Broken branch.	7 0	Broken branch.	7 3	,,
7 3	Burnt at base.	7 3	Forked.	7 8	Crooked.
7 10	Forked.	7 9	,,	7 6	Hollow.
7 8	,,	7 11	,,	7 9	,,
7 1	Burnt at base.	7 11	,,	7 2	Forked.
7 1	Broken branch.	7 1	Burnt at base.	7 4	Struck by lightning.
7 3	Forked.	7 9	Broken branch.	7 4	Swollen at base.
7 10	Broken branch.	7 2	Crooked.	7 0	Forked.
7 4	Forked.	7 3	Barked at base.	7 4	Hollow.
7 2	,,	7 4	Swollen at base.	7 9	Forked.
7 2	,,	7 6	Forked.	7 4	Hollow.
7 4	Top broken off.	7 6	,,	7 7	Broken branch.
7 11	Forked.	7 7	,,	7 3	Ditto.
7 2	,,	7 9	,,	7 9	Forked at 40 feet.
7 11	,,	7 5	Broken branch.	7 0	,, at 30 feet.
7 11	Dry.	7 4	Forked at 40 feet.	7 2	Broken branch.
7 1	Forked.	7 0	Barked at based.	7 8	Barked at based.
7 2	Hollow.	7 3	Forked.	7 1	Broken branch.
7 4	Forked.	7 8	Hollow.	7 11	Forked.
7 11	,,	7 3	Forked at 20 feet.	7 3	Broken branch.
7 11	,,	7 9	Hollow.	7 0	Hollow.
7 6	,,	7 3	Forked.	7 6	Forked.
7 1	,,	7 9	,,	7 5	Twisted.
7 5	,,	7 7	,,	7 8	Forked at 60 feet.
7 11	,,	7 2	Broken branch.	7 5	Swollen at 30 feet.
7 6	,,	7 3	Stag-headed.	7 8	,, at 50 feet.
7 6	Dry.	7 10	Stag-headed.	7 4	Barked at base.
7 2	Broken branch.	7 6	Forked.	7 3	Forked.
7 3	Forked.	7 6	Crooked.	7 2	,,
7 2	Swollen at 30 feet.	7 10	Struck by lightning.	7 1	,,
7 10	Forked.	7 1	Forked.	7 5	Hollow.
7 10	,,	7 10	,,	7 9	Forked.
7 1	,,	7 6	Hollow.	7 7	Hollow.
7 2	,,	7 10	Forked.	7 9	Barked at base.
7 2	Dead.	7 6	,,	7 2	Forked.
7 10	Forked.	7 2	,,	7 2	,,
7 11	Broken branch.	7 0	,,	7 8	Hollow.
7 10	Forked.	7 4	Hollow.	7 5	Forked.
7 2	,,	7 2	,,	7 6	,,
7 11	,,	7 9	,,	7 9	Hollow.
7 4	Rotten at base.	7 3	Broken branch.	7 11	Burnt at base.
7 7	Forked.	7 2	Hollow.	7 7	Swollen at base.
7 7	,,	7 1	Broken branch.	7 4	Burnt at base.
7 4	,,	7 8	Dry.	7 7	Forked.
7 11	,,	7 9		7 8	Struck by lightning.

Total number of trees (7'—8') = 379.

Size of tree, 8'—9'.

Girth of tree.	Remarks.	Girth of tree.	Remarks.	Girth of tree.	Remarks.
Ft. in.		Ft. in.		Ft. in.	
8 2	Forked at 40 feet.	8 2	Forked.	8 8	Forked.
8 8	,, at base.	8 2	Broken branch.	8 2	,,
8 2		8 8	Ditto.	8 0	Broken branch.
8 0		8 4	Ditto.	8 6	Ditto.
8 0	Forked at 30 feet.	8 0	Ditto.	8 4	Forked.
8 8		8 0	Ditto.	8 8	,,
8 6	Forked.	8 8	Forked.	8 3	Burnt at base.
8 1	Broken branch.	8 4	,,	8 6	Forked.
8 1	Ditto.	8 0	Broken branch.	8 7	Hollow.
8 1	Forked.	8 6	Forked.	8 9	Forked.
8 6	,,	8 6	Burnt at base.	8 3	,,
8 1	,,	8 4	Ditto.	8 9	Hollow.
8 3	,,	8 0	Ditto.	8 3	Forked.
8 10	,,	8 1	Broken branch.	8 0	Dry.
8 8	Broken branch.	8 1	Barked at base.	8 6	Forked.
8 3	Forked.	8 1	Forked.	8 0	,,
8 1		8 1	Broken branch.	8 2	,,
8 6	Forked at 50 feet.	8 8	Forked.	8 1	
8 1		8 0	,,	8 1	Broken branch.
8 11	Broken branch.	8 9	,,	8 9	
8 3	Ditto.	8 6	,,	8 6	

Size of tree, 8′—9′.

Girth of tree.	Remarks.	Girth of tree.	Remarks.	Girth of tree.	Remarks.
Ft. in.		Ft. in.		Ft. in.	
8 0		8 0	Forked.	8 9	Forked.
8 0	Dead.	8 11	,,	8 11	,,
8 9		8 1	,,	8 9	,,
8 4	Forked.	8 7	,,	8 6	Broken branch.
8 6		8 1	Broken branch.	8 4	Swollen at base.
8 2		8 6	Forked.	8 0	Barked at base.
8 4		8 3	,,	8 3	Forked.
8 2		8 11	Broken branch.	8 3	,,
8 4	Forked.	8 2	Forked.	8 9	,,
8 4		8 11	,,	8 2	Burnt at base.
8 10	Forked.	8 3	Hollow.	8 8	Broken branch.
8 9	,,	8 1	Forked.	8 6	Forked.
8 8	Burnt at base.	8 11	,,	8 0	,,
8 5		8 6	Burnt at base.	8 11	,,
8 1		8 10	Ditto.	8 6	Swollen at base.
8 10	Forked.	8 3	Forked.	8 4	Hollow.
8 0	,,	8 3	,,	8 6	Swollen at 10 feet.
8 0	,,	8 6	Broken branch.	8 0	Crooked.
8 8	,,	8 9	Dead.	8 7	Swollen at base.
8 0	Dry.	8 6	Forked.	8 4	Ditto.
8 11	Forked.	8 11	Forked at 30 feet.	8 2	Forked.
8 8	,,	8 10	Ditto.	8 6	,,
8 2	,,	8 3	Ditto.	8 4	Dead.
8 3	Burnt, dry.	8 5	Hollow.	8 8	Hollow.
8 11	Forked.	8 10	Forked.	8 1	
8 6	,,	8 8	,,	8 11	Forked.
8 9	,,	8 3	,,	8 4	Hollow.
8 0	Broken branch.	8 8	Hollow at base.	8 9	Barked at base.
8 8		8 4	Forked.	8 2	Forked.
8 11	Forked.	8 5	Barked at base.	8 4	,,
8 7	Barked at base.	8 0	Hollow.	8 1	Hollow.
8 4	Forked.	8 0	Forked at 40 feet.	8 0	,,
8 0	,,	8 3		8 4	Forked.
8 11	Hollow.	8 1	Forked.	8 11	,,
8 8	Forked.	8 9	,,	8 7	Hollow.
8 4	,,	8 7	,,	8 4	Swollen at base.
8 0	Broken branch.	8 4	Hollow.	8 9	Barked at base.
8 2	Ditto.	8 9	Forked.	8 9	Hollow.
8 6	Forked.	8 6	,,	8 11	Barked at base.
8 4	,,	8 9	,,	8 8	Burnt at base.
8 11	,,	8 4	,,	8 9	Ditto.
8 9	Burnt at base.	8 7	Barked at base.	8 3	Forked.
8 2	Ditto.	8 0	Forked.	8 0	Hollow.
8 0	Broken branch.	8 9	Broken branch.	8 6	Forked.
8 11	Forked.	8 2	Ditto.	8 8	
8 3	Hollow.	8 4	Barked at base.	8 8	
8 8	Dry.	8 6	Dry.	8 0	Forked.
8 7	Forked.	8 6	Forked.	8 3	Swollen at base.
8 4	,,	8 9	Top broken off.	8 5	Burnt at base.
8 6	,,	8 0	Forked.	8 5	Broken branch.
8 2	,,	8 3	,,	8 3	Forked.
8 4	,,	8 1	,, at 30 feet.	8 5	Burnt at base.
8 11	,,	8 2	Hollow.	8 3	Forked.
8 11	Broken branch.	8 10	,,	8 5	Burnt at base.
8 0	Forked.	8 5	Broken branch.	8 6	Hollow.
8 8	Hollow.	8 6	Dry.	8 9	Forked.
8 2	Barked at base.	8 4	Hollow.		

Total number of trees (8′—9′) = 233.

Size of tree, 9′ and over.

Girth of tree.	Remarks.	Girth of tree.	Remarks.	Girth of tree.	Remarks.
Ft in.		Ft. in.		Ft. in.	
10 6	Forked at 15 feet.	9 3	Forked.	9 1	Broken branch.
9 3		10 0	,,	10 10	
9 0		9 0	,,	9 8	Burnt at base.
9 6	Dead.	9 11	Hollow.	9 0	Ditto.
10 1		9 1	Forked, dead.	9 0	Forked.
9 3		9 4	,,	9 0	,,
9 9	Forked.	12 0	,,	9 2	,,
9 4	,,	9 9	Forked.	10 0	
10 4	,,	10 2	Burnt at base.	9 6	
9 0	Barked.	9 0	Ditto.	10 10	Forked.
10 3	,,	9 6	Ditto.	9 2	,,
9 4	Forked.	9 2	Forked.	9 7	
9 0	,,	9 7	,,	9 5	Barked and burnt.
9 8	,,	9 5	,,	9 0	Forked.
10 0	,,	9 8	Burnt at base.	9 3	,,
11 1	Slightly gone.	9 9	Ditto.	9 0	
9 2		10 0	Broken branch.	9 3	Forked.
9 4	Forked.	9 6	Dry.	9 2	,,
9 0	,,	10 2	Burnt at base.	9 7	,,
9 11	,,	9 2	Forked.	10 4	Broken branch.
9 1	Barked at base.	9 9	,,	10 8	
9 11	Forked.	9 3	,,	9 4	Forked.
11 1	Broken branch	9 3	,,	10 0	Dry and forked.
9 2	Barked at base.	9 5	,,	10 0	Forked.
9 11	Forked.	9 4	,,	9 3	Broken branch.
9 4	Broken branch.	10 2	,,	10 6	Forked.
9 3	Forked.	9 6	,,	9 4	,,
10 11	Slightly gone.	9 11	,,	9 4	,,
9 2	Forked.	9 11	Barked at base.	10 0	,,
9 11	,,	12 10		9 0	Hollow.
10 0	Broken branch.	16 6	Forked	9 7	Forked.
9 2	Forked.	9 2	,,	9 3	,,
10 1	Burnt at base.	9 0	Top broken off.	9 9	,,

Size of tree, 9′ and over—*contd.*

Girth of tree.	Remarks.	Girth of tree.	Remarks.	Girth of tree.	Remarks.
Ft. in.		Ft. in.		Ft. in.	
9 8	Forked.	9 1	Broken branch.	9 4	Broken branch.
9 10	,,	9 8	Forked.	10 7	Forked.
12 2	Hollow.	12 7	,,	10 3	,,
9 3	Forked.	10 3	,,	11 1	Hollow.
12 6	,,	9 4	Forked.	9 1	Swollen at base.
9 3	Forked.	9 6	,,	21 6	Forked.
9 0	,,	10 11	,,	9 11	,,
9 2	Hollow.	12 1	,,	12 4	,,
9 0	Gnarled.	9 2	,,	9 6	Hollow.
11 2	Forked.	9 9	Hollow.	9 4	,,
10 0	,,	9 5	Forked.	9 2	,,
9 5	,,	10 7	,,	9 7	,,
9 0	,,	9 2	,,	10 3	Forked.
11 3	,,	9 7	Broken branch.	9 8	,,
11 2	,,	10 3	Forked.	9 5	Top broken off.
10 9	Burnt.	9 6	,,	9 9	Forked at 40 feet.
9 8	Forked.	9 10	,,	11 0	Hollow.
9 0	Broken branch.	9 11	,,	9 4	Burnt at base.
9 2	Hollow.	10 6	Hollow.	9 6	Top broken off.
10 9	Forked.	10 6	Barked at base.	10 7	Forked at 20 feet.
12 4	Burnt at base.	10 11	Ditto.	10 3	,,
16 10	Forked.	11 1	Forked.	11 9	Forked.
9 0	,,	9 2	,,	9 6	Hollow.
9 7	,,	9 3	,,	13 7	Broken branch.
9 3	Hollow above.	12 2	,,	11 4	Hollow.
9 8	Hollow.	9 3	Barked at base.	9 9	Swollen at base.
9 2	Forked.	10 4	Forked.	9 11	Hollow.
16 8	Hollow, a mere shell at base.	10 9	Broken branch.	10 2	Forked at 30 feet.
9 4	Forked.	9 0	Hollow.	10 2	Ditto
9 0	,,	9 4	Forked.	11 9	Broken branch.
10 4	Hollow.	9 4	,, at 50 feet.	9 10	Ditto.
10 1	Forked.	9 4	,,	13 1	Hollow.
10 7	,,	10 3	,,		
10 9	Hollow.	9 6	,,		
9 0	Forked.	9 5	,,		
		11 1	Broken branch.		

Total number of trees (9′ and over) = 202.

SUMMARY.

Size of tree.	Number of sound trees.	Number of unsound trees.	Total number of trees measured.	Percentage of unsound trees.
1	2	3	4	5
6′—7′	1,766	305	2,071	14·72
7′—8′	1,040	379	1,409	26·89
8′—9′	306	233	539	43·23
9′ and over	117	202	319	63·32
Total ...	3,219	1,119	4,338	.....

APPENDIX VI.

FORMS FOR OFFICE USE.

Forest Department Forms likely to be useful in Mohurbhanj State.

No. 1. Register of Reserved Forests.
Fill up this form for protected forests as far as possible.
„ 2. Control book for Working Circles.
„ 3. Record of works of reproduction and improvement in each Working Circle.
„ 4. Depôt register of receipts of timber, &c.
„ 5. Ditto disposals ditto.
„ 6. Receipts and issues of timber, &c., in depôts.
„ 7. Sales of timber, &c., cut and collected by Government agency, to be filled up monthly.
„ 9. Sales of timber, &c., cut and collected by consumers and purchasers, to be filled up monthly.
„ 10. Outstandings on account of revenue, to be filled up monthly.
„ 11. Register of free grants of forest produce (monthly).
„ 12. Bill form for depôt use.
„ 13. Receipt for price of timber, &c., sold from depôt.
„ 14. Permit.
„ 15. Return of stores, tools and plant.
„ 16. Budget estimate (yearly).
„ 22. Daily cash-book and monthly cash account.
„ 23. Establishment bill.
„ 24. Travelling allowance bill.
„ 25. Transfer from Public Department.
„ 26. Daily labour voucher.
„ 28. Contractor's and disburser's ledger (monthly).
„ 29. Abstract of entries in the contractor's and disburser's ledger (monthly).
„ 30. Classified abstract of revenue and expenditure (monthly).
„ 36. Summary of revenue and expenditure (monthly).
„ 38. Title page of cases.
„ 39. Register of cases.
„ 40. Register of $\frac{\text{books}}{\text{maps}}$.
„ 41. Register of issues and receipts of documents.
„ 48. Record of demarcation and maintenance of boundaries (yearly).
„ 52. Register of breaches of Forest Rules (yearly).
„ 53. Area of forest tracts protected from fire (yearly).
„ 57. Outturn of timber and fuel (yearly).
„ 58. Outturn of minor forest produce (yearly).
„ 63. Outstandings on account of revenue (yearly).
„ 64. Outstandings and liabilities of contractors and disbursers (yearly).
„ 65. Financial results (yearly).

Note.—Specimen copies might be sent from the Conservator's Office.

APPENDIX VII.

GENERAL REMARKS.

Boundaries.

With regard to the boundaries given, they are only approximate, and until demarcation will run along the edge of the forest adjacent to the clearings of the villages named; at the time of demarcation they should be straightened as much as possible, as it is important to have the least possible length of demarcated line, seeing that its up-keep will be a considerable expense. The red ink line in the 4 miles = 1 inch map, Appendix III, gives only the approximate external boundaries of the Reserves. I have not attempted to depict the boundaries of the internal villages, of which there are a large number, especially in the northern portion. The figures given in Part II, paragraph 59, are of course exclusive of these internal cultivated areas. The demarcation should consist of sâl posts embedded in a mound of earth or heap of stones, the posts to be consecutively numbered, and from each post the next two to the right and left of it should be visible; in places where elephants are numerous a flat stone slab may be substituted for the posts, as the latter are very often uprooted by these animals.

The Working Circle block boundaries may be demarcated by roughly cleared lines, sundry trees at intervals along the line should be marked with a ring of white paint to facilitate identification. Posts with number of compartment painted on them to be firmly driven into the ground at each end of the line.

The boundaries of the Working Circle should also be demarcated by a thoroughly cleared line with posts at intervals; the posts may be smaller, say about half the size of those used in the demarcation of the forest boundary.

The end.

C. C. Hatt,

Assistant Conservator of Forests, on Foreign Service to the Mohurbhanj State.

Baripada,

The 15th January 1895.

R. D'R. & W. S.—Reg. No. 346C—151—23-1-96.